Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 SCA 11,0 o 1
1. Edition

En

PE 6 P 110 A 720 RS 3016

EP/RSV 350-1100 P 1/310 R

supersedes

C---

company engine

Scania DSJ 11

* In the case of greater dispersion alter the delivery-valve spring pre-tension

accordingly.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

-0,05 (+0,15)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm3/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1000	12	13,4 - 14,1	0,8			2,5±0,1** (max.2,2-2,9)
600 -	9 1 5	6,6 - 7,8 19,7 - 21,5				(max.2,2-2,9)
200	9	4,1 - 5,3				

Adjust the fuel delivery from each outlet according to the values in [

B. Governor Settings

1 Uppe	r rated speed	rev/min	Interme	diate rated	speed	4	Lower	rated speed	(3) to	rque control
Degree of deflection	Control rod travel	Control rod travel				Control- lever		Control rod travel		Control rod trave!
of control	mm	mm rev/min				deflection in degrees	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.67	1100	16,0				ca.31	350	6,0		
	1150 1200	11,7 6,0	with spri	out au ng	XIIIa	У	150 350	19 - 21 5,7-6,3		
28	1150 1200 1350	10,4-12,5 4,4- 7,8 0,3- 1,0		with auxiliary spring			400 550	3,2-4,7		max.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat		el delivery aracteristics	Starting f	uel delivery 5	4a Idle stop	
Test oil to rev/min	emp 40°C (104°F) cm ² /1000 strokes 2	Note changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min	cm ∛ 1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	161,0-163,0	1130-1140*	600	160,0-164,0	1200	190-240 9 -13, on max.2 25 - 35 on max.4	**	

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH

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estoil-ISO

Test Specifications Fuel Injection Pumps 1 WPP 001/4 MAN 20,9c and Governors

3. Edition

PE 12 P 120 A 520 LS 836

RQV250-1150PA353R

supersedes company

2.80 MAN

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7

engine

D 2542 MLE 478,0 (650 PS)

 $0 - 45 - 60 - 105 - 120 - 165 - 180 - 225 - 240 - 285 - 300 - 345^{\circ} + 0.5^{\circ} (-0.75^{\circ})$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

	3,00-3,10	
Port closing at prestroke	(2.95-3.15	mm (from BDC

Cy1.12

Rotational speed ray/min	Control rod travel mm	Fuel delivery cm³/100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,3-11	4 18,5 - 18,8	0,5(0,9)			
250	6,7-6,9	2,2 - 2,8	0,8(1,2)			÷
			•			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated s	í i		Intermediate	rated sp	1	Lower rated	speed	I _	Sliding s	leeve travel
deflection	Control	Oontrol rod ta	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		0
iever	rod travel	rev/min 28		rev/min		lever	rev/min	mm ③	rev/min	1
1	2	3	4	5	6	7	В	9	10	11
max.	1150	15,2-17,8	-	-	-	ca.11	100	min.8,3		0,6-0,9
	1450	0 - 1,0					250	6,7-6,9	520 8 3 0	3,2-3,7 5,7-6,0
ca.66	10.3	1190-1200					520-5	80 =2.0	1150	8,1
	4,0	0 - 1,0				<u>3</u>	J20 J			

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil terr		Rotational-speed 2b limitation intermediate speed			Starting idle switchin		Torque- travel	Control cod
rev/min	cfh³/1000 strokes	rev/min 4a	rev/min	cm³/1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1150	185,0-188,0 (182,0-191,0)	£			100 100-	200,0-220,0 170 (80-190)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

estoil-ISO

Test Specifications Fuel Injection Pumps 1 WPP 001/4 MAN 11,1 r 2 and Governors

1. Edition

PES 6 P 120 A 720 LS 388

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

RQV 250-1050 PA 567

supersedes

company

D 2566 MLE

engine

220 kW (299 PS)

A. Fuel Injection Pump Settings (2,95-3,15)

6 - 2 - 4 - 1 - 5 - 3

0 -60 -120-180-240-300

mm (from BDC)

RW 10.5

Port closing at bres	UONO	3,00-3,10	min (nom boo)	1,00		
Rotational speed Control rod travel rev/min mm		Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1050	11,0	17,4 - 17,8	0,5(0,9)			
	+0,1					
250	6,1-6,3	1,5 - 2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated s	speed	•	Intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
	rev/min Control	Control rod travel	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		, ①
of control	rod travel mm	mm rev/min (28)	of control lever	rev/min	mm (4)	of control lever	rev/min	mm ③	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1050 1350	15,2-17,8 0 - 1,0				ca.11	250	min.7,5 6,1-6,3		1,1 5,4-5,6
ca.63	10,0	1090-1100 1200-1230				<u>3</u>	380-4	140 = 2,0	1100	8,4

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed 2b limitation intermediate speed			Starting Idle switchir		Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm ³ /1000 strokes	rev/min 6	cm ³ /1000 strokes	rev/min 8	travel mm 9
1050	174,0-178,0 (171,0-181,0)	1090-1100*			100	260,0-290,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 MAN 11,1 q 4

2. Edition

Testoil-iSO 4113 PES 6 P 110 A 720 LS375 Komb.-Nr. 0 402 046 181

ROV 750 PA377R

supersedes 8.79

company: engine

MAN D 2566 MTE, 142 kW

Nr. 7009

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

mm (from BDC)

Cy1.6; RW = 9.0 - 12.0 mm

Rotational speed rev/min	Control rod travel mm 2	2 . 95 – 3 . 15) Fuel delivery cm³/100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 8
700	12,5-12,	5 15,2 - 15,4	0,4(0,8)			
250	6,8-7,0	1,1- 1,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated s	peed		Intermediate	rated sp	e d	Lower rated	speed		Sliding s	leeve travel
5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 -		Control rod travei	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		ı O
	rod travel mm	mm rev/min 28	of control lever	rev/min	mm 4	of control lever	rev/min	mm 3	rev/min	1
1	2	3	4	5	6	7	В	9	10	11
-	11,5	750-755	_	_	-	-	-	_	750	4,6
	4,0	755-785								
	900	0 - 1,0								
						(3a)				

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro		Rotational-speed 2b limitation intermediate speed	Fuel deliv	ery characteristics 5a peed 5b	Starting Idle switchir	_	Torque-control 5 travel Control ro	
		rev/min 4a	rev/min	cm ³ /1000 strokes	rev/min 6			travel mm
700	152, 0-154, 0 (149,5-156,5)		-	-	100	215,0-235,0 (211,0-239,0	-)	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Festoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 q 3

2 Edition

supersedes 8.79

company:

engine

MAN-Nr. 7082 D 2566 MTE (220 kW -299 PS)

tracteur

PES 6 P 110 A 720 LS375 Komb.-Nr. 0 402 046 193

ROV 250-1100 PA276DR

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at pres	stroke (2,95-3,15)	mm (from BDC)	Cy1.	6; RW = 9.0 -	12.0 mm
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm ³ /190 strokes 3	cm ³ / 100 strokes 4	mm 2	cm ³ /106 strokes 3	mm 6
1100	13,1-13,	15,9 - 16,1	0,4(0,8)			
250	7,3-7,5	1,1 - 1,7	0,4(0,7)			
500/700		C, 4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in [

B. Governor Settings

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed	Sliding sleeve travel		
deflection	rev/min Control	travei \	19	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		①
of control lever	rod travel mm 2	mm rev/min (3	28	of control lever 4	rev/min 5	mm 4	of control lever 7	rev/min 8	mm 3	rev/min 10	mm 11
max.	1100	15,2-17,	8	1	-	-	ca.13	100 250 360-	min.8,9 7,3-7,5 420 =2,0	250 600	1,2-1,4 3,8-4,2
ca.50		1140-115 1190-122 0 - 1,0	0				ς, 3a)	000		1140	8,0

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		limitation intermediate speed	(a)		Starting idle switchir		Torque travel	control 5
rev/min cm³/1000 strokes		rev/min 4e	rev/min	cm ³ /1000 strokes	rev/min	ev/min cm³/1000 strokes		travel mm
1	2	3	4	5	6	7	8	9
1100	159, 0-161, 0 (156, 0-164, 0)		750 500	160,0-164,0 (157,0-167,0 164,0-168,0 (161,0-171,0		215,0-235,0	500	13,1+0, 13,4+0, 13,3+0,
	100-170 (80-190)							

Checking values in brackets

1 mm less control rod travel than col. 2



Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 20,9 a 1 1. Edition

estoil-ISO 4113

PE 12 P 100 A 520/4 LS 834

ROV 250-750 PA 353 R

supersedes

company MAN

engine

D 2542 M6

185 kW (252 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7

0 -45 -60 -105-120-165-180-225 -240 -285-300-345

A. Fuel Injection Pump Settings

Port closing at pres Rotational speed rev/min	Control rod travel	Fuel delivery cm³/100 strokes	mm (from BDC) Difference cm³/ 100 strokes 4	Control rod travel mm 2	Cyl.12 Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve)
750	12,2 +0,	8,3 - 8,5	0,3(0,6)			
250	6,4-6,6	1,2 - 1,8	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated a	peed		Intermediate	rated sp	eed	Lower rated	speed		Sliding sleeve travel	
deflection	rev/min Control	Control rod (la)	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		①
of control lever	rod travel mm	mm rev/min (2a)	of control lever	rev/min	mm 4	of control lever	rev/min	mm ③	rev/min	mm 11
1	2	3	4	5	6	 	8	9	10	11
ca.68	750 950	15,2-17,8 0 - 1,0				ca.12	100 250	min.8,0 6,4-6,6	250 400 600	1,1-1,2 2,5-2,8 4,1-4,6
ca.61		790-800 855-885				39			750	6,3

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil terr		Rotational-speed 20 limitation intermediate speed	Fuel delivery characteristics 5a high idle speed 5b		Starting Idle switchir	•	Torque- travel	Control 5
rev/min cm³/1000 strokes		rev/min 4	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
750	83,0 - 85,0 (81,0 - 87,0)	790-800*	-	-	100 250	19,5-21 mm 13,0-19,0	•	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps 1 MPP 001/4 MB 19,1 1 and Governors 1. Edition



PE 12 P 100 A 320 LS828

RO 750 PA484R

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 + 0.50 $0 - 45 - 60 - 105 - 120 - 165 - 180 - 225 - 240 - 285 - 300 - 345^{\circ}$ (+ 0,75) supersedes Daimler-Benz

company: OM 404

engine (202kW-275 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Senches and Testers

A. Fuel Injection Pump Settings

Cy1.12

Fort Closing at pres	IIIOXO	(3.15-3.35)	mm (from BDC)			
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,1-12,2	9,7 - 9,9	0,3(0,6)	41		
250	7,9-8,1	1,2 - 1,8	0,3(0,5)			
				l		

Adjust the fuel delivery from each outlet according to the values in [

B. Governor Settings

Upper rated s	peed	1	Intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
deflection	rev/min Control	Control rod ta	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		1
	rod travel mm	mm rev/min 2a	of control lever	rev/min	mm (4)	of control lever	rev/min	mm 3	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.30	11,1 5,4	750-755 775-785				7			750	4,1
						3 a				

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roo Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel delivery characteristics 5a high idle speed 5b		Starting Idle switchir	. 0	Torque- travel	Control cod	
fev/min 1	cm³/1000 strokes	rev/min 49	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min 8	travel mm	
700	97,0-99,0 (95,0-101,0)	750-755*			- 780	dispersion max.4 (6)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.79

BOSCH

Festoil-ISO 4113

Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 16,0 d 1

1. Edition

PE 10 P 100 A 320 LS811

RQ 750 PA 374R

supersedes

company

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2 0 -45 -72 -117-144-189-216-261-288-333°

Daimler-Benz OM 403 engine

(113kW - 153 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

port closing at prestroke

mm (from BDC)

Cy1. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,6	9,3 - 9,5	0,3(0,6)			
	+0,1					
300	7,4-7,6	1,7 - 2,3	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated s	peed	•		Intermediate	rated sp	ed	Lower rated	speed	0.1.4		
deflection	rev/min Control rod travel	Control rod travel	(b)	Degree of deflection of control		Control rod travel	Degree of deflection		Control rod travel	Sildings	leeve travel
	mm 2	rev/min	(28)	lever	rev/min 5	mm 4	of control lever	rev/min	mm 3	rev/min	mm
<u> </u>	-	3	-	•	3	6	7	8	9	10	11
ca.20	10,6	750-755								750	3,8
	5,3	780-790							l		
1											
							3a		_		

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

_	-							
Full-load of Control-ro Test oil ter	lelivery d stop np. 40°C (104°F) 2	intermediate speed	Fuel delivery characteristics (Se high idle speed (Sb)		Starting Idle switching	•	Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm ³ /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
700	93,0 - 95,0 (91,0 - 97,0)	750-755*		dis	100 785 persi	110,0-130,0 5,2-5,4mmRW on max.4(6)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.78

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2

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 12,8 m 1. Edition

En

PE 8 P 100 A 320 LS 810 RQ 1050 PA 310

Q 1050 PA 310

supersedes company engine:

Daimler-Benz OM 402 165 kW(224 PS)

8 - 7 - 2 - 6 - 3 - 5 - 4 - 1

je $45^{\circ} \pm 0.5^{\circ} (0.75^{\circ})$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(3,35-3,55)

imm (from BDC)

Cy1.8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,1-0,1	10,3 - 10,5	0,3(0,6)			
300	7,1-7,3	1,0 - 1,6	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking PRG che	g of slider ck	വ	Full-load s Setting po	•	•	cifications (4)	Idle speed regulation Setting point Test specifications (5)				Torque d	control 3
rev/min		O	rev/min	Control rod travel mrm	Control rod travel mm	rev/min	rev/min	_	rev/min	Control rod travel mm	rev/min	travel mm
1	2		3	4	5	6	7	8	9	10	11	12
1010	19,2-2	1,8	1010	20,5		1055-1060 1095-1105						

Torque-control travel on flyweight assembly dimension a =

mit

Speed regulation: At 1055-1060 min-1

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de governor co Test oil tem		Control rod stop 3a	ery characteristics	Starting f		
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min	cm ³ /-1000 strokes 5	rev/min	Control rad travel cm ³ /1000 strokes:/ mm
1000	103,0- 105,0 (101,0- 107,0)				100	115,0-135,0 19,5- 21,0mmRW
, * *	high idle speed				1098	** 4,0-4,2 mmRW 124,0-144,0

Checking values in brackets

3.81

BOSCH

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WPP 001/4 1. Edition

PE 12 P 120/921 LS35

EP/RSUV 250-900 P10 V9055

supersedes

company

Henschel 12 V 1516 engine (660 PS)

Testing with T nozzles and fuel lines 8x2x1000 according

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,5 + 0,1

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ⁹ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6	
800	12	18,8 - 19,4	0,8				
600 -	9	10,5 - 12,0					
	15	24,1 - 26,3	Cam sequ	ence and a	ngular sam spa	cing.	
200	9	8,1 - 9,3	1-12-9-4	-5-8-11-2-3	ngular cam spa 3-10-7-6-1 je 3	30°	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1(1)	deflection travel travel mm rev/min		Intermed	late rated	speed •	Control- lever deflection in degrees 7		rated speed Control rod travel mm	1 3 /	rque control Control rod travel mm
ca.25	900 930 950	16,0 10,8 6,0		without auxiliar			250 100 250	8,0 19 - 21	880 300	0 1,2-1,8
23		9 - 12 2,4-4,4 0,3-1,0	with auxiliary spring			450 620	7,7-8,3 1,6-4,6 0 - 1			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp 40°C (104°F)	Rotational- speed limitat	39 Fu	el delivery aracteristics	Starting f	uel delivery 5	da Idle stop		
rev/min	cm ³ /1000 strokes 2	changed to) rev/min 3	rev/m:n 4	cm¥1000 strokes 5	rev/min	cm ³ 1000 strokes 7	rev/min 8	travel mm 9	
880	ca.260	910							
Full	load see HEN!								

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. § 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 MAN 20,9 h Edition

PE 12 P 120 A 520 LS843

RQ 750 PA477

supersedes 8.79

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 0 - 45 - 60 - 105 - 120 - 165 - 180 - 225 - 240 - 285 - 300 - 345

D 2542 MLE (Nr.7092-320kW-435PS)

+0,50 (+0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at pres		2.95-3,15)	mm (from BDC)		Cy1.12	
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,3+0,1	17,6 - 18,0	0,5(0,9)			
250	3,9-4,1	1,7 - 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in p

B. Governor Settings

Upper rated s	peed	1		Intermediate	rated spe	ed	Lower rated	speed		Sliding sleeve travel	
deflection	rev/min Control	Control rod	(1a)	Degree of deflection of control		Control rod travel	Degree of deflection		Control rod travel	Cilding 5	1
	rod travel mm	rev/min	2a	iever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
•		750-755 770-780									
							<u>3</u> 8				

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed (2b) limitation intermediate speed	Fuel delivery characteristics 5a S high idle speed 5b			fuel delivery 6	Torque- travel	Control rod
rev/min	cm ² /1000 strokes	rev/min 4a	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
700	176, 0-180, 0 (173, 0-183, 0	1			100	19,5-21mmRW		
				dis	775 persi	4,4 mm RW n max6(9)		

Checking values in brackets

* 1 mm less control rod travel than col. 2 10.81

2

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4
1. Edition

Er

supersedes

company:

engine

Enasa 9151

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test equipment as per VDT-WPP 110/2 3. Edition

A. Fuel Injection Pump Settings

Port closing at prestroke

PE 6 P 110 A 321 RS 263

2.8 + 0.1

mm (from BDC)

RQ 175/1100 PA218R

Detational speed	Control rod	Fuel delivery	Difference	Control rod	Fuel delivery	Spring pro tensing
Rotational speed rev/min	travel mm 2	cm ³ /100 strokes	Difference cm³/ 100 strokes 4	travel mm	cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1000	12	15,9 - 16,6	0,7			
600	9 15	8,3 - 9,5 22,0 - 23,7				
200	9	6,6 - 7,8				
•						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

PRG che	ck Control rod travel	Full-load s Setting po rev/min 3	•	_	cifications 4 rev/min	Idle spee Setting p rev/min 7	Control rod travel		cifications 5 Control rod travel mm		Control rod travel mm
450	15,6-16,4	450	16,0	1110 1140 1160 1210	0 -10,4		0	150	6,1-8,1 4,8-7,0 3,1-5,2 0	-	-

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	<u>3</u> b	Starting f	, —
rev'min 1	cm³/-1000 strokes 2	rev/min 3	rev/min	cm ³ /-1 000 strokes		rev/min	Control rad travel cm ³ /1000 strokes / mm
	ca. 10 mm RW - Carry out adj	ustment on engi	e				
,							

Checking values in brackets

7.76

BOSCH

restoil-ISO 411

Test Specifications Fuel Injection Pumps 1 and Governors



VDT-WPP 001/4 1. Edition

PE 6 P 120 A 420 LS 314

RQV 300-950 PA 112 KR,314 KR 300-875

supersedes

PE 6 P 120 A 400 LS 315

Allis Chalmers company:

PE 6 P 120 A 420 LS 316

RQV 300-1050 PA 298 KR,312KR

Testing with T nozzles and fuel lines 8 x 2 x 1000!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings

Port closing at prestroke

2,8 + 0,1

mm (from BDC) + 0.15 - 0.05

Rotational speed ray/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	26,7 - 27,3	1,2			
600	6 15	7,4 - 8,6 32,8 - 35,3				
200	6	3,5 - 4,5				

Adjust the fuel delivery from each outlet according to the values in [

B. Governor Settings

RQV 300-950 PA T12 JR, 314 KR

Upper rated a	speed rev/min	Control rod	Intermediate	rated sp	eed Control rod	Lower rated speed Degree of Control rod			Sliding sleeve travel	
Degree of deflection of control lever	Control rodtravel mm	travel	deflection of control lever	rev/min 5	travel mm 4	deflection of control lever 7	rev/min 8	travel mm 3 9	rev/min 10	mm 11
ca.66	1050 1100 1150 1210 1300	15,0-18,0 10,7-15,0 6,0-11,6 0 - 7 0	1	-	-	ca.10	250 350 450 550		400 550 1000 1200- 1290	1,8-2,7 3,8-4,2 7,5-7,9 end (11)

Forque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roe Test oil ten		Rotational-speed 20 limitation intermediate speed	3.20 300 (30)		Starting Idle switchir	9	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strckes	rev/min	travet mm
1,	2	3	4	5	6	7	8	8
<u>314 wi</u> 950	th 112 KR, 314 208,0-210,0	KR: 990-1000*	750	195,5-198,5		120,0-160,0 19,0- 25,0 ge-over point 250 min ⁻¹		./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 41

B. Governor Settings

Upper rated s	peed	· · · · · · · · · · · · · · · · · · ·		Intermediate	rated spe	ed	Lower rated	speed		Sliding	eeve travel
Degree of deflection of control lever	rev/min Control rodtravel mm	travel		Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.66	875 900 980 1060	15,0-17 12,0-15 3,2-8 0	,4	-	-	-	ca.10	120 200 350 550	1,7-3,1 0	0-160 350 700 980- 1050	Start 2,3-2,8 5,4-5,9 end (11)
							(3a)	۰			

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Forque-control (travel	Torquetravel	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Starting Idle switchir	Fuel delivery characteristics 5a high idle speed 5b		ional-speed (2b) tion ediate speed	Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)	
ev/min mm	rev/min 8	cm3/1000 strokes	rev/mın	cm ³ /1000 strokes 5	rev/min 4	ın 4a	cm ³ /1000 strokes	rev/min
ooint) r point	120,0-160,0 19,0- 25,0 Change-over 150-250 min-	100 300	140,5-144,5	600	915*	164,0-166,0	875
oint						4		

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

RQV 300-1050 PA 298 KR, 312 KR

Upper rated s	speed			Intermediate	rated spe	ed	Lower rated	speed		Sliding sleeve travel	
Degree of deflection of control	rev/min Control rod travel	Control rod	(1a)	Degree of deflection of control	1	Control rod travel	Degree of deflection of control	I	Control rod travel		1
lever	mm		(2a)	iever	rev/min	mm (4)	lever	rev/min	mm 3	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.66	1050 1100 1150 1210 1300	15,0-18 10,7-15 6,0-11 0 - 7	5,0	-	-	-	ca.10	250 350 450 550	6,4-8,0 3,0-5,2 1,3-2,8 0	550	1,8-2,7 3,8-4,2 7,5-7,9 end(11)
							3a)				

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		intermediate speed s			fuel delivery 6	Torque- travel	Control rod	
rev/min	cm ³ /1000 strokes 2	rev/min 4a)	rev/min 4	cm ³ /1000 strokes 5	rev/min	cm ^{\$} /1000 strokes 7	rev/min 8	travel mm
LDA 1050	1,0 bar 256,0-258,0	1090-1100*	LDA 700	1,0 bar 238,0-244,0	100	120,0-160,0		
			LDA 700	0 bar 171,0-179,0	300	19,0-25,0		
					Change-over point 150-250 min ⁻¹			

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500 rev/min decreasing pressure – in bar gauge pressure

-3-

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
,	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
316 with 298 KR 312 KR	0,48	0,33	- 0,1 - 0,3 mm - 4,15 - 4,55 mm
			1

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

estoil-ISO 4113

WPP 001/4 MB 19,1 b

2. Edition

1.74 supersedes RQ 750 PA248R(1) (3)PE 12 P A 320 LS812 ..310R Daimler-Benz (4)company: RQ 900 PA310R OM 404 ..310R (5)RQ 1100PA248R(2) engine: (1 - 230 PS) 12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 (2 - 320 PS) -45 -60-105-120-165-180-225-240-285-300-345° (3 - 242/265PS) (4 - 288/317PS) All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers (5 - 336/370PS)

A. Fuel Injection Pump Settings Port closing at prestroke (3.35 - 3.55)

mm (from BDC)

Cy1.12

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,7 - 12,4	0,5			
600	9	5,0 - 6,2 15,3 - 17,0				
200	9	3,5 - 4,5				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQ 750 PA248R (1)

Checkin PRG che rev/min 1	Control rod travel	Full-load s Setting po rev/min 3	•	-	cifications 4) rev/min		Control rod travel	Test spe	cifications 5 Control rod travel mm	Torque o	Control rod (3)
Cont	rol lever	24°		700 750 780 820 870	13 - 16 10,2 6,2-8,2 0,5-4,5	-	_	-	-	-	-

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3	Fuel delive	ery characteristics 3b	Starting for the speed	d Control
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	rod travel cm ³ /1000 strokes:/ mm 7
(1) 730 760- 785-	76,0 - 78,0 765: 1 mm RW le 795: 4,8 mm RW	ess				
Incre	ase by ± 2,0 cm³!					

Checking values in brackets

,,,,,	_	(
ntroi		
Control rod		
avel		
nm		
2		
,		

	g of slider	Full-load	-	_	adventions (A)	Idle sper	•		cifications (5)	Torque o	control 3
PRG che	Control rod travel	rev/min	Control rod travel mm	Contro! rod trave! mm 5	rev/min 6	rev/rnin	Control rod travel	rev/min	Control rod travel mm	rev/min	Control rod travel mm 12
* Contr	ol lever 2	0		1030 1100 1150 1240	4,5-7,3	1		•	-		-

Torque-control travel

Speed regulation At

t mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)	(2)	Control rod stop	Fuel deliv	ery characteristics	(OL)	Starting f Idle spee	uel delivery d Control
rev/min cm ³ /-1000 strokes		rev/min	rev/min	cm ³ /-1000 strokes 5		rev/min	cm ³ /1000 strokes f mm
(2) 1080 94,0 - 96,0 1100- 1110: 1mm R 1145- 1160: 4,0 m ***** disper	\W ** m RW					100	*** 5 mm RW > column 2

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

RQ 750 PA310R (3)

Checking PRG che	g of slider ck	1	Full-load s	•	-	cifications (4)	ldle spec Setting p	-		cifications (5)	Torque o	(3)
rev/min	Control rod travel mm 2	O	rev/min	control rod travel mm	Control rod travel room 5	rev/min	rev/min 7	Control rod travel mm 8	rev/min	Control rod travel mm		Control rod travel mm 12
*	-	32	0		690 710 750 790 850	14,4-18,7 12,6-15,4 8,6-10,0 1,6-5,2 0 - 1	-	-	-	-	_	-

Torque-control travel on flyweight assembly dimension a =

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop 3a	Fuel delive	ery characteristics	コレバ	Starting fuel delivery Idle speed Con		
rev/min	cm ³ /-1000 strokes 2	rev/min 3	rev/min	cm ³ /-1000 strokes 5		rev/min 6	red travel cm ³ /1000 strokes / mm 7	
(3) 730 750- 780-	83,0 - 85,0 760: 1mm RW ** 795: 4,3 mm RW *****	less				100	***	
**** Increa	se by ± 2,0 cm ³ !							

En Checking values in brackets

Testoil-ISO 4113

B. G	overnor S	etting	38				RQ 9	00 PA	310R (4)	MB 19	,1 b	-3-
Checkin PRG che rev/min	Control rod	Full-load setting por	•	-	rev/min	Idle sper Setting p rev/min 7	Control rod travel		control rod travel	Torque o	Control rod travel mm	3
* Cont	rol lever 3			810 850 900 930 970	18,5-23,4 14,6-18,2 8,5-10,4 2,4-6,2 0 - 1		-		-	_	-	

Torque-control travel on flyweight assembly dimension a =

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever op. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting f	d Control
rev/min	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
(4) 880 915- 940-	88,0 - 90,0 925: 1mm RW ** 955: 4,5 mm RW *** dispersion				100	5 mm RW ***** > column 2

Checking values in brackets

B. Governor Settings

RQ 1100 PA310R (5)

Checking PRG chec		Full-load			cifications (4)	Idle spec	Control		cifications 5	Torque o	Control rod
1	travel mm	rev/min	rod travel	rod travel	rev/min	rev/min	rod travel	rev/min	travel mm	rev/min	travel mm
1	2	3	4	5	6	7	8	9	10	11	12
*		33°			16,0-20,3 13,4-16,9 8,4-10,3 0,4-5,0 0 - 1	-		-	-	-	-

Torque-control travel on flyweight assembly dimension a -

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever np 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics	Starting f	uel delivery d (Control
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm ³ /~1000 strokes 5	rev/min	rod travel cm v 1000 strokes / mm 7
(5) 1080 1125 1160-	102,0-104,0 1135: 1mm RW ** 1175: 4.0 mm RW ***				100	5 mm RW ****
***	Increase by ± 2	0 cm³!				

Checking values in brackets

2

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 DAF 11,1 a
4. Edition

En

PE 6 P 100/320 RS68

RQ 200/1100 PA24R

company:

supersedes

PE 6 P 100/320 RS94

RQV 200-1100 PA37R

D A F DK 1160

1.75

..A..

EP/RSV ...-... P ../326R

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

3.2 + 0.1

mm (from BDC)

+ 0,15

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,4 - 12,9	0,5			
600	9 12 15	5,2 - 6,2 11,4 - 12,8 17,3 - 18,5				
200	9	3,4 - 4,4				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

PRG che	Control rod travel	Full-load s Setting po rev/min 3	•	Test spec Control rad travel	elfications 4	Idle spee Setting p rev/min 7	Oint Control rod travel	Test spe	cifications 5 Control rod travel mm		Control rod (3)
500	15,6-16,4	500	16,0	1120 1150 1180 1230	15,6-16,0 8,0-14,0 0 - 9,0 0 - 1		0	100 200 300 340	6,0-8,1 4,4-6,4 0,4-2,4 0	-	-

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d	elivery on control lever np. 40°C (104°F)	Control rod stop 38	Fuel delive	ery characteristics		arting fuel delivery le speed Control		
rev/min	cm³/-1000 strokes	rev/min 3	rev/min	cm ³ /-1000 strokes	rev/mi	rod travel		
850	107,0-109,0 (105,0-111,0)				100	21 mm RW		
						./.		

Checking values in brackets

2.77

PACCI

estoil-ISO 4113

RQV .. 37 R

B. Governor Settings

Upper rated s	peed		Intermedia	e rated spe	eed	Lower rated	speed		Sliding	eeve travel
Degree of deflection	Control	Control rod (1	deflection	1	Control rod travel	Degree of deflection		Control rod travel	onding s	1
of control lever	rodtravel mm		of control lever	rev/min	mm 4	of control lever	rev/min	mm 3	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	1100 1150 1200 1250 1310	14,8-17, 10,0-14, 4,0-10, 0 - 6	1			ca.10	100 200 300 450 700	6,3-8,0 4,5-6,9 3,4-3,8 2,2-3,6 2,2-3,6	1100	8,2
						(3a)				

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem	stop	Rotational-speed (2b) limitation intermediate speed	Fuel deliv high idle s	rery characteristics 5a peed 5b	Starting Idle switchin		Torque- travel	Control rod
rev/min	cm ^{\$} 1000 strokes	rev/min 4a	rev/min	cm ³ /1000 strokes	rev/mın	cm3/1000 strokes	rev/min 8	travel mm
See pa	ge 2!	1120						
						ļ		

Checking values in brackets

B. Governor Settings

EP/RSV 200-1100 P1/326R

Upper rated s	peed			Intermediate	rateo spe	ed		Lower rated	speed			Slidings	leeve travel
	rev/min Control rod travel	Control rod travel	(1a)	Degree of deflection	l	Control rod travel		Degree of deflection	l	Control (rod	Unding S	1
of control lever	mm		2a)	of control lever	rev/min	mm (4)	of control lever	rev/min	mm	3	rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca.68	1100 1180	16,0 10,2		without	auvil	iany		ca.29	200	6,0		300	0
	1220	6,0		spring	duxii	lary			100	19 -			
	1200 1240 1310	5,6-9,6 2,0-5,6		with au spring	kil iar	у		(3a)	200 300 400	5,7-6 1,8-3 0 -		200	0,3-0,5
	1310	0,3-1											

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro- Test oil ten		Rotational speed (2b) imitation intermediate speed	Fuel deln high idle s	very characteristics 5a speed 5b	Starting Idle switchin		Torque- travel	(3)
rev/min	cm³/1000 strokes	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ⁵ /1000 strokes 7	rev/min 8	Control rod travel mm
See pa	ge 2!	1120						
								./.

Checking values in brackets

* 1 mm less control rod travel than col 2

^{* 1} mm less control rod travel than col 2

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min Control rod travel mm rev/min 3	Intermed	diate rate	d speed	Control- lever deflection in degrees 7 rev/min mm 8 9		rev/min	rque control Control rod travel mm	
ca.62	900 950 980	16.0 10.5 5.8	*	*		ca.25	200 140 200	6,0 19 - 21 5,7-6,3	300	0
29	950 980 1050	9,0-11,2 4,0- 7,4 0,3- 1					250 350	3,4-4,7 0 - 1	200	0,3-0,5

C. Settings for Fuel Injection Pump with Fitted Governor

U	ill-load stop	6 Rotational- speed limitat.	39 Ft	Fuel delivery characteristics		ruel delivery 5	4a Idle stop		
rev/min 1	cm ³ /1000 strokes	Note: changed to) rev/min 3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
	***					-			
		910							

Checking values in brackets

* 1 mm less control rod traval than col. 2

B. Governor Settings

EP/RSV 200-1200 P 4/326R

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min Control red travel mm rev/min 3	Interm	ediate ra	ted speed	Control- lever deflection in degrees 7	Lower rev/min	cr rated speed Control rod travel mm	3 To	rque control Control rod travel mm
ca.73	1200 1240 1270	16,0 9,5 4,0	** with spri		uxilian	ca.23 y	200 100 200	6,0 19 - 21	400	0
2	1280	9,0-11,0 2,0- 4,0 0,3- 1	with spri		liary		300 420	5,7-6,3 1,8-3,8 0	250	1,2-1,8

C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp. 40°C (104°F)	Rotational- speed limitat.	nel delivery Paracteristics	Starting fuel delivery 5 42 Idie stop				
rev/min 1	cm ³ /1000 strokes 2	changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
***	In accordance	with specia 1220	name	plațe on pump!				·
		_				·		

DIZ

Checking values in brackets

* 1 mm less control rod travel than col. 2

②

Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/STE 12,0 a 5. Edition

<u>En</u>

PE 8 P 110 A 221 LS 212, Z

.. LS 212, Z .. LS 212, Z RQ 300/1300 PA 174 D RQV 250/1300 PA 222 D ./. RQV 250-1300 PA 259 D ./. supersedes 1.74 company: S t

Steyr WD 815.60

LDA see STE 8,1 a

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,8 + 0,1

mm (from BDC)

 $(+ 0.15 \\ - 0.05)$

engine:

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	10,3 - 11,0	0,5			
600	9 15	3,8 - 4,8 14,2 - 15,7				
200	9	1,5 - 2,5				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking PRG che rev/min 1	Control rod			_	rev/min	Control rod travel	Test spe	cifications 5 Control rod travel mm	Torque o	Control rod (3)
600	15,7-16,3	600	16,0	1320 1360 1400 1460	15,6-16,0 7,3-13,7 0 - 8,5 0	0	150 250 350 450	6,3-8,1 4,6-6,8 1,9-4,3 0	-	-

Torque-control travel on flyweight assembly dimension a =

) mm Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governo?

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting for	uel delivery d Contrei
rev/min	cm ³ /-1000 strokes	rev/min 13	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	ind transl Lin ³ /1000 strokes ;/ mm 7
212 1300 212Z	- 0,5 bar 121,0-123,0 120,0-124,0		0 1300	bar 108,0-111,0 107,0-112,0	100	13 - 15
1300	132,0-134,0 131,0-135,0		1300	118,0-122,0 117,0-123,0	100	15 - 17
						./.

Checking values in brackets

BOSCH

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B. Gov	ernor	Setting	gs			RQV .	. 222D		•	STE	12,0 a
Upper rated	speed			Intermediate	rated spe	ed	Lower rat	ed speed		Slidings	leeve travel
Degree of deflection of control	Control rodtravei		(a)	Degree of deflection of control	routmin.	Control rod travel	Degree of deflection of control	1	Control rod travel	rev/min	1
lever 1	mm 2	rev/min 3	(24)	lever	rev/min 5	mm (4) lever 7	rev/min 8	9	10	11
ca.50	1320 1360 1450 1540	14,0-18 10,2-19 0 - 8			_	-	ca.13	100 250 350 450	7,9-10,3 7,2- 9,7 2,0- 4,6 0	1320 1320	3,8-4,2 8,3 0 0,9-1,1
							(3a)				

Torque control travel a =

1,0mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem		Rotational-speed (2b) Fuel delivery ch limitation high idle speed (rery characteristics 5a peed 5b	Starting to ldle switching	\sim	Torque- travel	Control cod
rev/min	cm ⁹ /1000 strokes	rev/min 48	rev/min	cm ³ /1000 strokes 5	rev/min 6	cm3/1000 strokes	rev/min 8	travel mm 9
212 - 1300	LDA 0,5 bar 121,0-123,0	1330-1345*	LDA 1300	0 bar 108,0-111,0	100	12-13		
212Z 1300	132,0-134,0		1300	118,0-122,0 Chang		 15-17 er point 200	-130	min-1

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

RQV ..259D

Upper rated	speed			Intermediate	rated spe	ed	Lower rated	speed		Sliding sl	eeve travel
Degree of deflection of control	rev/min Control rod travel	mm		Degree of deflection of control		Control rod travel	Degree of deflection of control]	Control rod travel		1
lever	ШШ	rev/min (2a)	lever			lever	rev/min		rev/min	mm
1	2	3		4	5	6	/	8	9	10	11
ca.50	1340 1400	14,4-17 8,6-13	,3	-	-	-	ca.13	200 300 400	9,1-11,0 6,5- 9,4 2,7-5,8		3,8-4,1 8,4
	1460 1570	1,6-9 0	,0					510	0	1300 600	0 0,4-0,6
							3 a				

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem		intermediate speed			Starting Idie switchir		Torque- travel	Control rod
rev/min	cm³/1000 strokes 2	rev/min (4a)	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ⁸ /1000 strokes 7	rev/min 8	travel mm 9
212 - 1300	LDA 0,5bar 121,0-123,0	1330-1345*	LDA 1300	0 bar 108,0-111,0	100	12 - 13		
212Z 1300	132,0-134,0		1300	118,0-122,0	Chan	15 - 17 ge-over point 130 min-1		

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

STE 12,0 a

Testatn =

1000

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
46	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
212 212Z + RQ-RQV	0,12 - 0,14	0,19 - 0,24	+ 0,1 + 0,9

Notes:

(1) when n =

1000 rev/min and gauge pressure = 0

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Testoil-ISO 41

Test Specifications Tuel Injection Pumps 2 and Governors

VDT-WPP 001/4 1. Edition

PE 8 P 120 A 920/4 LS 816

RQ 250/1200 PA 252

supersedes

company:

Fiat

engine:

X 8/7

Testing with T nozzles and fuel lines 8x2x1000 according

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,5 + 0,1

mm (from BDC)

 $(+ 0,15 \\ - 0,05)$

					0,00	
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	20,7 - 21,5				
	6 15	5,3 - 6,5 22,5 - 24,4				
200	6	0,6 - 1,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1	Checking of slider PRG check Control rod Full-load speed Setting point Control				cifications (4)					Torque o	Torque control		
rev/min	travel	rev/min 3	red travel	Control rad travel mm	rev/min 6		Control rod travel rnm 8	rev/min 9	travel mm	rev/min	Control rod travel mm		
550	15,7-16,3	550	16,0	1210 1250 1280 1340	15,6-16,0 6,0-12,6 0 - 8,4 0	540	0	150 250 350 440	6,9-8,1 4,0-7,2 1,8-4,2 0	-	•		

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (194°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting to	ruel delivery 6
rev/min 1	cm³/-1000 strokes	rev/min 3	rev/min 4	crn ³ /~1000 strokes 5	rev/min	rod travel cm ³ /1000 strokes://mm 7
1200	150,0- 154,0	1200				

Checking values in brackets

4.75

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2

Festoil-ISO 4113

Test Specifications Fuel Injection Pumps 2 and Governors

WPP 001/4 MAN 20,9 o

1. Edition

PE 12 P 110 A 520 LS 835

RO 750 PA 404 R

supersedes company: MAN D 2542 MTE

1 - 5 - 9 - 8 - 3 - 4 - 11- 10- 2 - 6 - 7 - 12 $0 - 15 - 60 - 75 - 120 - 135 - 180 - 195 - 240 - 255 - 300 - 315^{\circ} + 0.5^{\circ} (+ 0.75^{\circ})$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Porticiosing at prest	roke	(2.95-3.15)	mm (from BDC)		Cy1.12	
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,3+0,1	16, 1 - 16, 3	0,4(0,8)			
250	5,5-5,6	2,1-2,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking PRG che	g of slider ck Control rod	①	Full-load s Setting po			cifications (4)	Idle speed regulation Setting point Test specifications Control rod			cifications (5)	Torque control Control rod		
rev/min	travel		rev/min 3	red travel mm 4	rod travel	rev/min 6	rev/min 7	rod travel	rev/min 9	travel mm 10	rev/min 11	travel mm 12	
-	-		-	-	11,3 5,4	750-755 775-785	-	-	-	-	-	-	

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At 0 - 755 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop	Fuel delive	ery characteristics	<u>3</u> b	Starting fuel delivery Idle speed		
rev/min	cm³/-1000 strokes 2	rev/min 3	rev/min	cm ³ /-1000 strokes 5		rev/min 6	cm³/1000 strokes:/ mm	
700	161,0 - 163,0 . (158,0 - 166,0)	_	-	-		-	-	

Checking values in brackets

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 1. Edition

En

PES 6 P 110 A 420 LS 3037 RSV 425-1100 P2/424DR Kombi-Nr. 0 402 076 709

supersedes company

IHC DTI-817 C

engine

420 HP

Values only apply to test nozzle-and-holder assembly 1 688 901 016 and fuel-injection test tubing 9 681 230 724

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(1,95-2,05)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm³/100 strokes	100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1100	14,0-14,1	25,7 - 25,9	0,4			
425	5,4 - 5,	3,3 - 3,8	0,6			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

	r rated speed rev/min Control rod travel mm mm rev/min		interm e c	diate rated	speed	Control- lever deflection	Lower rated speed Control rod travel rev/min mm		i (v)	rque contro' Control rod travel
løver 1	2	3	4	5	6	in degrees 7	8	9	10	11
loose	1300	0,3-1,7				ca.21	425	5,5	1080	14,0-14,1
	X = 3	5					100	20,0-21,0	700	14,7-14,9
ca.43		150 = 13,0 225 = 4,0 0,3-1,7					425 430 - 490	5,4-5,6 2,0	500	14,7-14,9

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat	11.036	iel delivery naracteristics	Starting fuel delivery 5 4a Idle stop				
rev/min	cm\$/1000 strokes	Note changed to) rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min	cm ² /1000 strakes	rev/min	Control root travel mm	
LDA 1100	1,1 bar 257-259,0 (255-261)	1140-1150*	LDA 700 LDA 800	1,00 bar 264,0-270,0 (263 -273) 0 bar 149,0-157,0 (148,0-158,0)	100 425 1195- 1225	180-205 33,5-38,5 4 mm RW			

Checking values in brackets

* 1 mm less control rod travel than col 2

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D. Adjustment Test for Manifold Pressure Compensator

IHC

-2-

Test at n =

500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
3037 with 424 DR	0,22 - 0,27	0,85 - 0,88	H = 29,4 mm

Notes.

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps 1 WPP 001/4 MAN 20,9 n

1. Edition

and Governors

PE 12 P 120 A 520 LS 836

ROV 250-1050 PA 353

supersedes

MAN company:

D 2542 MLE

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 0 -45 -60 -105-120-165-180-225 -240 -285-300-345

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at pres	troke	3,00-3,10 (2,95-3,15)	mm (from BDC)		Cy1.12		
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)	
rev/min 1	mm 2	cm ³ /100 strokes 3	cm³/ 100 strokes 4	mm 2	cm ³ /100 strokes 3	mm 6	
1050	10,7 ^{+0,1}	17,0 - 17,4	0,5(0,9)				
250	6,5-6,7	2,2 - 2,8	0,8(1,2)				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed	•	Sliding sleeve travel	
Degree of deflection of control	rev/min Control	Control rod (a) travel	Degree of deffection of control		Control rod travel	Degree of deflection of control		Control rod travel		1
lever	rod travel	rev/min (28)	lever	rev/min	mm 4	lever	rev/min	mm 3	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68		15,2-17,8				ca.12	100	min. 8,1	250	1,2-1,3
	1300	U = 1					250	6,5-6,7	400 1100	2,4-2,6 7,4
ca.59	9,7 4,0	1090-1100 1175-1205				295-410 3a)				, ,

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten	stop	limitation		Fuel delivery characteristics 5a high ide speed 5b		fuel delivery 6	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 4	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1050	170,0-174,0 (167,0-177,0)				100	200, 0-220, 0		
	ę			di	1100 spers 100-	4,0 mm RW ion max.6(9) 170 (80-190)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

PES 5 A 95 D 410 LS 2543 Z

RQ 250/1100 AB 1039 DL

supersedes3.81 company: MAN

D2565 M/MF/MFSV engine:

137 kW (186 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Cv1. 5

		(4) 1/2 4) 400/				
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strckes 3	Spring pre-tensioning (torque-control valve) mm
1100 250 750/500	11.0+0. 5,9-6,1		0,3(0,6) 0,3(0,5) 0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

PRG che	ck Control rod travel	Full-load s Setting po rev/min 3			rev/min	Idle spee Setting p rev/min 7	Control rod travel	Test spe	cifications 5 Control rod		Control rod
600	15,6-16,4	600	16,0	10,0			6,0	100 250	min.7,5 5,9-6,1	1100	11,0
1100 1300	10,8-11,2 0 - 1		•	4,0	1180-1210			355 - 500	395 = 2,0 0 - 1	790 550	11,6 11,9

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting for Idle spee	uel delivery d Gontral
rev/min	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	mod travel cm ³ /1000 strokes:/ mm 7
1100	110, 0 - 112, 0 (108, 5 - 114, 5)		750	106,5 - 109,5 (104,5 - 111,5)		150 - 160
			500	max. 109,5 (111,5)	250	6,0 mm RW

Checking values in brackets

40

WPP 001/4 MB 17,4 b
3. Edition

En

PE 10 P 100 A 320 LS 842

RQ 300/1150 PA 187-2R

supersedes

8.81 Daimler-Benz

company:

OM 403

engine:

259 kW (352 PS)

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2

10 - 3 - 4 - 1 - 6 7 6 6 6

0 -45 -72 -117-144-189-216-261-288-333 \pm 0,5° (\pm 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(3,15-3,35)

mm (from BDC)

		0,10 0,00				
rev/min	Control rod travel mm 2 +0,1	Fuel delivery cm ³ /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel a mm	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioming (torque-control valve) mm 6
1150	12,0	11,5 - 11,7	0,3(0,6)			
300	7,4-7,6	1,2 - 1,8	0,3(0,5)			
•						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

PRG che	Control rod travel	Full-load s Setting po	•		rev/min	Idle spec Setting p rev/min 7	coint Control red travel	Test spe	cifications 5 Control rod travel mm	rev/min	Control rod (3)
650	13,8-14,6	650	14,2	11,0	1195-1210	300	7,5	100	min.9,0	1150	12,0-12,1
1400	0 - 1			4,0	1235-1265			300 410-	7,4-7,6 450=2,0	600	12,0-12,2

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

11.81

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d governor d Test oil ter	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting for	Contrai
rev/min	cm ³ /~1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	red travel cm ³ /1000 strokes:/ mm 7
1150	115,5 - 117,5 (113,5 - 119,5)		600	100,5 - 105,5 (98,5 - 107,5)	100	125,0-145,0

Checking values in brackets

C18

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Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4

1. Edition

Eη

PE 6 P 110 A 720 RS246

EP/RSV 250 - 900 P7/368R

supersedes

company

engine

Steyr WD 614.80

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

estoil-ISO 4113

1,8 + 0,1

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ⁹ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12	8,1 - 9,1	0,4			
	9 45	3,2 - 4,2 13,7 -15,3				
200	9	1,1 - 2,1				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Degree of deflection	r rated speed Control rod travel mm	rev/min Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6			Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm 9	16 5 7	rque control Control rod travel mm
ca.60	900 950 980	16,0 9,7 4,0	auxi			ca.25	250 100 250 350	6,0 19 - 21 5,7-6,3 0,6-3,1	880 290	0 1,2-1,8
20	950 980 1100	8,2-11,3 3,1- 7,1 0,3- 1,0					450	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat		el delivery aracteristics	Starting f	uel delivery 5	4a Idle stop	
rev/min	emp 40°C (104°F) cm ⁹ /1000 strokes 2	Note changed to) rev/min 3	rev/min	cm ³ /1000 strokes 5	rev/min 6	cm \$100 0 strokes 7	rev/min 8	Control rod travel mm 9
900	111,0-113,0 110,0-114,0	910						

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

LS 387

WPP 001/4 MWM 39,8 a 1. Edition

(1) PE 6 P 120 A 300/3 LS 346

RSUV 300-750 P 9 A 332/1 R (2) PE 6 P 120 A 320 LS 347

supersede MWM 33,2 d 1 v.10.78

company Südbremse

engine D/TD/TBD 602 v 12

(1) 1 - 6 - 2 - 4 - 3 - 5 (2u3)1 - 5 - 3 - 4 - 2 - 6 $0 - 15 - 120 - 135 - 240 - 255^{\circ} + 0,5^{\circ} (+0,75^{\circ}) 0 - 15 - 120 - 135 - 240 - 255^{\circ} + 0,5^{\circ} (+0,75^{\circ})$

TBD 602V12S

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Kom.-Nr. 0 401 806 047(1)

0 401 876 225(2) u.

A. Fuel Injection Pump Settings

0 401 816 054(3)

Port closing at prestroke

estoil-ISO 4113

(3) PE 6 P 120 A 300

2,2 - 2,3(2,15-2,35)

mm (from BDC)

RW = 21 mm

		cm³/100 strokes	cm ³ /	Control rod travel mm 2	cm ⁹ /100 strokes 3	(torque-control valve) mm 6
700	13,0+0,1	26,6-27,0	0,5(0,9)			
300 .	5,5-5,7	(26,3-27,3) 2,8- 3,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Uppe	r rated speed	rev/min	Intermediate rated speed			4		rated speed	3 Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
loose	800 x	0,3-1,0 5,25	-	-	•	ca.29	300 100	5,1	700 450	13,0+0,1 13,0+0,1	
ca.70	12,0= 4,0= 980=	815 - 84	1				300 315-	5,5-5,7 375=2,0m	325 m	14,2+0,6	

The numbers denote the sequence of the tests

without (1), (3) and

C. Settings for Fuel Injection Pump with Fitted Governor

(2)

	ill-load stop emp 40°C (104°F)	Rotational- speed limitat		el delivery arabtenstics	Starting fi	uel delivery 5		e stop Control rod travel
rev/min 1	cm#/1000 strokes	changed to) rev/min 3	rev/min 4	cm¥1000 strokes 5	rev/min 6	cm∯1000 strokes 7	rev/min 8	mm 9
insp	ull-load delive ction sheet. s run in tandem		ŀ	the engine in a	100 ccord	19,5.21,0 ance with 1		jine

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.82

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WPP 001/4 MB 11,8 a 1 2. Edition

PE 6 P 110 A 720 RS 15

RO 250/1100 PA 111 DR

supersedes 3.81

Daimler-Benz company:

OM 355 engine:

154 kW (210 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2.75-2.95)

mm (from BDC)

Rotational Speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Oifference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1090	12,0+0,1	10,0 - 10,2	0,3(0,6)			
250	7,9-8,1	1,7 - 2,3	0,3(0,5)			
•						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking PRG che rev/min 1	Control rod	Full-load s Setting po rev/min 3	•	_	cifications (4) rev/min	Idle spec Setting p rev/min 7	Control red travel	Test spe	cifications 5 Centrol rod travel mm	Torque o	Control rod (3)
600	15,5-16,5	600	16,0	11,0 4,0	1135-1150 1210-1240		6,0	250	min.7,0 5,9-6,1 25≈2,0		12,0-12,1 12,3-12,4 12,6-12,7

Torque-control travel

Spend regulation: A135-1150 min-1

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever np. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics	(die speed		
rev/min	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	Control red travel cm ³ /1000 strokes:// mm 7	
1090	100,0 - 102,0 (98,0 - 104,0)		700 450	96,0 - 99,0 (94,0 -101,0) 90,0 - 94,0 (88,0 - 96,0)	I	150,0-170,0 bei min.18,0 mm RW	

Checking values in brackets

3.82

BOSCH

2

estoil-ISO 4113

Test Specifications Fuel Injection Pumps 2 and Governors

VDT-WPP 001/4 HEN 12,0 c

1. Edition

PE 6 P 100 A 821 LS 344

RQ 250/1075 PA 135 D

supersedes

Company:

Daimler-Benz

engine:

HHF 524

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

3.3 + 0.1

mm (from BDC)

					,00	
Rotational Speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	10,6 - 11,2	0,5			
600	9 15	4,9 - 6,1 13,8 - 15,2				
200	9	3,2 - 4,2				
•						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checkin	g of slider	Full-load s	full-load speed regulation Idle speed regulation						Torque control			
PRG che	()	Setting po	int	Test spe	cifications (4)	Setting p	oint	Test spe	cifications (5)			3)
rev/min	Control rod travel mm	1	Control rod travel rnm 4	Control rod travel rnrn	rev/min		Control rod travel rmm	rev/min	Control rod travel mm		Control rod travel mm	٠
600	15,7-16,3	600	16,0	1090 1150 1200 1270	15,6-16,0 7,0-12,5 0 - 7,2 0	560		150 230 350 460	6,5-8,1 4,8-7,0 2,1-4,6 0	-	_	

Torque-control travel on flyweight assembly dimension a =

1120-1135 Speed regulation: At

1 mm less control

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever np. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics 3b	Total Species		
rev/min	cm³/-1000 strakes	rev/min 3	rev/min 4	cm ³ /-1000 strokes	rev/min	Control rad travel cm ³ /1000 strokes:// mm	
1075	125,0 - 127,0 123,0 - 129,0	600	600	120,0 - 123,0 118,0 - 125,0	100	19 - 21	

Checking values in brackets

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,4 i 2. Edition

€n

PES 4 MW 55/320 RS 21 RW 375/2200 MW 27 See page 2!

0 420 081 017

supersedes company

7.79 Daimler-Benz

engine

OM 616

1 - 3 - 4 - 2 = 0 - 90 - 180 - 270 + 0.5 (0.75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Cart closing at prestroke

2,10-2,20 (2,05-2,25)

mm (from BDC)

21,0mm Control rod travel

estoil-ISO 4113

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	13,2+0,1	3,8 - 3,9	0,25(0,3)			
375	6,6-6,8	0,65-0,75	0,1(0,15)			
1600	Sect. C	col.4-5	0,25(0,3)			
2180	Sect. C	co1.4-5	0,25(0,3)	[1	
			+			

Set uniform delivery according to the values in [

Checking values in brackets

B. Governor Settings

without altitude-pressure compensator

Lower rated speed			Upper rated speed			Variations in control rod travel			
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel	
lever	mm	rev/min	lever	mm	rev/min		rev/min	mm	
1	2	3	4	5	6	7	8	9	
30 ①	11,0 6,6-6,8 **	375 385 -	8	U - 1.U	2180 2280-2300 2670-2730 2950	12 13 14	100 1600 1000	20,5-21,5 13,0-13,2 13,2-13,3	
5	2,0	650-700	(1)	_		6	Switching po) (230~320)	

C. Settings for Fuel Injection Pump with Governor Mounted

		Full-load speed (8a)	Variations delivery	in fuel (17)	Starting fuel delivery Idle		_	
Test oil temp 40°C (104°F)			ļ	18			Difference	
rev/min	cm 1/1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes	
1	2	3	4	5	6	7	8	
2180	39,0-41,0 (38,0-42,0)	2280-2300* (2275-2305)	1600	39,0-41,0 (38,0-42,0)	100	min.57	6,0	2a)
			1000	(37,5-40,5)	375 2550	6,5-7,5 (6,0-8,0)		15)
						14,5-20,5 (13,5-21,5)	2,5 (3,0)	16)

Checking values in brackets

less control rod travel than in Column 2

5.82

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Fédérale d'Allemagne par Robert Bosch GmbH.

1. Testing of sections A, B and C should be done without the ADA aneroid box. When this test has been completed the ADA aneroid box is connected.

Testing the governor with ADA-aneroid box (147)

Engine speed

Setting point

Control-rod travel reduction from full-load control-rod travel

1000 min⁻¹

840 mbar (630 mm Hg)

1.0 - 1.2 (0.95 - 1.25) mm

Checking point

1000 min⁻¹

907 mbar (680 mm Hg)

0.3 - 0.6 (0.35 - 0.65) mm

2. Pin projection = 16.65 ± 0.05 mm.

3. Adjusting the idle stage

Text replaces section 4.1 of the test instructions.

Set the control lever to 30°.

Operate the fuel-injection pump at $n = 800 \text{ min}^{-1}$.

Screw the spring retainer (torque-control capsule) or the driver with a pin wrench KDEP 1064/1 or a 1/2" hexagon-socket-screw-key so far that a control-rod travel of 1.2 - 1.5 mm is attained.

Further test steps see Test Instructions VDT-W-420/300 En.

- 4. ++ At this engine speed exceed the control-rod travel by 0.4 + 0.1 mm. Idle delivery must not be affected.
- 5. Adjustment angle: Stop ... idle = 35°, idle ... full load = 39°.
- 6. Sensing lever adjustment: Set the sensing lever at $n=375 \, \text{min}^{-1}$ (control lever in full-load position). At this speed the control-rod travel must exceed the full-load control-rod travel at $n=1000 \, \text{min}^{-1}$ by $0-1-0.3 \, (0.1-0.4 \, \text{mm}) \, \text{mm}$.

7. Check the pneumatic shut-off:

Control lever in idle position. Operate the fuel-injection pump at $n = 375 \text{ min}^{-1}$.

At p_{ij} = 450 mbar (338 mm Hg) (vacuum) the control-rod must must quickly return to control-rod travel 0 mm.

WPP 001/4 MB 3.0 f

9. Edition

En

PES 5 MW 55/320 RS 15

supersedes 2.79

RW 375/2200 MW 19

Daimler-Benz

 $1 - 2 - 4 - 5 - 3 = 0 - 72-144-216-288 + 0,5^{\circ} (0,75^{\circ})$

OM - 617 USA

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

21,0mm

Control rod travel

Festoil-ISO 4113

Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
2	3	4	2	3	6
13,1-13,2	3,75-3,85	0,25(0,20)			
6,6-6,8	0,65-0,75	0,10(0,15)			
Sect. C	col.4-5	0,25(0,3)			
	mm 2 13,1-13,2 6,6-6,8	travel cm³/100 strokes 2 3 13,1-13,2 3,75-3,85	travel mm cm³/100 strokes 2 3 4 13,1-13,2 3,75-3,85 0,25(0,20) 6,6-6,8 0,65-0,75 0,10(0,15)	travel travel travel mm cm³/100 strokes cm³/100 strokes mm 2 13,1-13,2 3,75-3,85 0,25(0,20) 6,6-6,8 0,65-0,75 0,10(0,15)	travel mm cm³/100 strokes cm³/100 strokes 2 cm³/100 strokes 2 mm cm³/100 strokes 2 3 cm³/100 strokes 2 3 cm³/100 strokes 2 cm³/100 strokes

Set uniform delivery according to the values in [

Checking values in brackets

B. Governor Settings

** without altitude-pressure compensator

Lower rated speed		Upper rated spe	eed		Variations in control rod travel		
deflection trav		deflection of control	travel	Rotational speed		speed	Control rod travel
lever mm	rev/min	lever	mm	rev/min		rev/min	mm
1 2	3	4	5	6	7	8	9
(2) 6,	6-6,8 375 ** 385	67 <u>+</u> 2	12,4-12,6 11,5 4,0 0-1,0	2180 2280-2300 2670-2730 2950	(12) (13) (14) (6)	1600 1000 2180 Switching po	20,5-21,5 12,8-13,0 13,1-13,2 12,4-12,6

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load	delivery (19)	Full-load speed 8a	Variations delivéry	in fuel (17)	Starting for	uel delivery	'	
Test oil te	mp 40°C (104°F)			18			Difference	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strakes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes	
1	2	3	4	5	6	7	8	
2180	39,0-42,0 (38,0-43,0)	2280-2300* (2275-2305)	1600	39,0-41,0 (38,0-42,0)	100	mind.56,0	6,0	29
			1000	37,5-38,5 (36,5-39,5)	375	6,5-7,5 (6,0-8,0)	(1,0)	15)
					2550	14,5-20,5 (13,5-21,5)	2,5 (3,0)	16)

Checking values in brackets

less control rod travel than in Column 2

7.79

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung
1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Fedérale d'Allemagne par Robert Bosch GmbH.

1. Testing of sections A, B and C should be done without the ADA aneroid box. When this test has been completed the ADA aneroid box is connected.

Testing the governor with ADA-aneroid box (147)

Engine speed	Setting point	Control-rod travel reduction from full-load control-rod travel
1000 min ⁻¹	840 mbar (630 mm Hg)	0.9 - 1.1 (0.85 - 1.15) mm
•	Checking point	
1000 min ⁻¹	913 mbar (685 mm Hg)	0.1 - 0.5 (0.05 - 0.55) mm

2. Pin projection = 16.65 ± 0.05 mm.

3. Adjusting the idle stage

Text replaces section 4.1 of the test instructions.

Set the control lever to 30°.

Operate the fuel-injection pump at $n = 800 \text{ min}^{-1}$.

Screw the spring retainer (torque-control capsule) or the driver with a pin wrench KDEP 1064/1 or a 1/2" hexagon-socket-screw-key so far that a control-rod travel of 1.2 - 1.5 mm is attained.

Further test steps see Test Instructions VDT-W-420/300 En.

- 4. ++ At this engine speed exceed the control-rod travel by 0.4 ± 0.1 mm. Idle delivery must not be affected.
- 5. Adjustment angle: Stop ... idle = 35°, idle ... full load = 39°.
- 6. Sensing lever adjustment: Set the sensing lever at n = 375 min⁻¹ (control lever in full-load position). At this speed the control-rod travel must exceed the full-load control-rod travel at n = 1000 min⁻¹ by 0.2 0.5 (0.1 0.6) mm.

7. Check the pneumatic shut-off:

Control lever in idle position. Operate the fuel-injection pump at $n = 375 \text{ min}^{-1}$. At $p_u = 450 \text{ mbar}$ (338 mm Hg) (vacuum) the control rod must quickly return to control-rod travel 0 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 VOL 6,0 e 4. Edition

En

PES 6 MW 100/320 RS 5

0 413 206 001

0 420 093 011

supersedes company

6.79 Volvo

RWV 300...1150 MW 4

engine:

TD 60

Angular cam spacing see page 2!

' All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,50-2,60 (2,45-2,65)

mm (from BDC)

9,0-12,0^{Control rod travel}

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	10,0+0,2	7,6-7,8	0,35(0,6)			
300	5,7-5,9	1,5-1,9	0,35(0,55)			
600	Sect. C	co1.4-5	0,5 (0,7)			
				•		
Set uniform delivery					Che	cking values in brackets

Lowerra	ated sp	eed		Upper rated speed				Variations in control rod travel		
Degree deflection of contri	าก	Control rod travel		Degree of deflection of control		Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever		mm	rev/min	lever		mm	rev/min		rev/min	mm
1		2	3	4		5	6	7	В	9
20	123	min.8,5 5,7-5,9 **		74 <u>+</u> 4	7899	9,1 4,0 0-1,0	1200-1210 1320-1380 1460	12 13 14	100 1000 600	20,5-21,5 10,0-10,2 9,7-9,9
	(4)	0-1,0	550	40+5	(1) (1)	-	-	6	Switching po 100-230	(80-250)

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load d	elivery (19 no 40°C (104°F)	Full-load speed 8a regulation	Variations delivery		Starting f	uel delivery	Difference	
rev/min	cm³/1000 strokes	rev/min 3	rev/min 4	(18) cm³/1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strok	es
1000	76,4-78,4 (74,4-80,4)	1200-1210* (1195-1215)	600	62,8-66,8 (60,8-68,8)	100 300	min.140 15,8-19,8 (13,3-22,3)	3,5 (5,5)	(12a) (15) (16)

Checking values in brackets

less control rod travel than in Column 2

BOSCH

1. Angular cam spacing:

$$1 - 5 - 3 - 6 - 2 - 4 = 0 - 60 - 120 - 180 - 240 - 300^{+} 0.5 (0.75^{o})$$

2. Idle stage

4.0 + 0.25 mm

- 3. ++ At this engine speed the auxiliary idle spring must just touch. Idle delivery must not be changed.
- 4. Whilst stationary control-rod travel must be at least 0.1 mm. (Check after adjusting the locking speed)

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WPP 001/4 VOL 6,0 a. 5. Edition

En

PES 6 MW 100/320 RS 5

0 413 206 001

supersedes 7.79 volvo

RWV 300...1400 MW 4

0 420 093 002

engine TD 60

 $1 - 5 - 3 - 6 - 2 - 4 = 0 -60 - 120 - 180 - 240 - 300 \pm 0,5(0,75)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,50-2,60 (2,45-2,65)

mm (from BDC)

9.0-12.0Control rod travel

Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ¹ /100 strokes	mm
2	3	4	2	3	6
10,0+0,1	7,6 - 7,8	0,35(0,6)			
5,7-5,9	1,5 - 1,9	0,35(0,55)			
Sect. C	col.4-5	0,5 (0,7)			
	10,0+0,1 5,7-5,9	travel cm ³ /100 strokes 2 3 10,0+0,1 7,6 - 7,8	travel mm cm ³ /100 strokes cm ³ /100 strokes 2 cm ³ /100 strokes 4 10,0+0,1 7,6 - 7,8 0,35(0,6) 5,7-5,9 1,5 - 1,9 0,35(0,55)	travel mm cm³/100 strokes 2 10,0+0,1 7,6 - 7,8 0,35(0,6) 5,7-5,9 1,5 - 1,9 0,35(0,55)	travel mm cm ³ /100 strokes cm ³ /100 strokes mm cm ⁴ /100 strokes 2 cm ⁴ /100 strokes 2 3 10,0+0,1 7,6 - 7,8 0,35(0,6) 5,7-5,9 1,5 - 1,9 0,35(0,55)

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated sp	eed		Upper rated sp	eed		Variations in control rod travel		
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	iever	mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
20 1 2 3 4 5	8,5 5,7-5,9 ** - 2,0		82 <u>+</u> 4	0 - 1,0	1400 1440-1450 1520-1560 1670	(12) (13) (14) (6)	1000 700 550 Switching po	20,5-21,5 10,0-10,1 9,5- 9,7 9,4- 9,6

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load o	delivery (19)	Full-load speed (8a)	Variations delivery	in fuel (17)	Starting f	uel delivery		
Test oil ter	mp. 40°C (104°F)			l 🔞			Difference	
rev/min	cm ³ /1000 strokes	rev/m:n	rev/min	cm ³ /1000 strokes	rev/min	cm ² /1000 strokes	cm ³ /1000 stroke:	s
1	2	3	4	5	6	7	8	
1000	76,4-78,4 (74,4-80,4)	1440-1450 (1435-1455)	550	59,3-63,3 (57,3-65,3)	300	15,8-19,8	3,5	12a
						10,0 13,0	1	15)
								16)

Checking values in brackets

less control rod travel than in Column 2

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung
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- 1. Idle guide-sleeve travel = 4.25 ± 0.1 mm
- 2. Whilst stationary control-rod travel must be at least 21 mm.
- 3. ++ At this engine speed the auxiliary idle spring must just touch. Idle delivery must not be changed.

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

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WPP 001/4 VOB 6,0 a 3. Edition

En

PES 6 MW 100/320 RS 13

0 413 206 003

supersedes 6.79
company Volvo-BM

RWV 300...1200 MW 16

0 420 093 008

mpany D 60

 $1 - 5 - 3 - 6 - 2 - 4 = 0 -60 - 120 - 180 - 240 - 300 \pm 0,5 (0,75)^{\circ}$

' All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1,95-2,15)

mm (from BDC)

9-12

Control rod travel

Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
mm	cm ³ /100 strokes	cm³/100 strokes	mm	cm ³ /100 strokes	mm
2	3	4	2	3	6
9,5+0,2	6,6 - 6,8	0,35(0,6)			
5,7-5,9	1,5 - 1,9	0,35(0,55)			
		•			
	travel mm 2 9,5+0,2	travel mm cm³/100 strokes 2 3 9,5+0,2 6,6 - 6,8	travel mm cm³/100 strokes cm³/100 strokes 2 3 4 9,5+0,2 6,6 - 6,8 0,35(0,6)	travel travel travel travel mm cm³/100 strokes cm³/100 strokes mm 2 2 9,5+0,2 6,6 - 6,8 0,35(0,6)	travel travel travel travel mm cm³/100 strokes mm cm³/100 strokes 2 3 9,5+0,2 6,6 - 6,8 0,35(0,6)

Set uniform delivery according to the values in [

Checking values in brackets

B. Governor Settings

Lower ra	ted sp	eed		Upper rated st	eed		Variations in co	ntrol rod trave	
Degree of deflection of contro	leflection travel		Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel	
lever		mm	rev/min	lever	mm	rev/min	İ	rev/min	mm
1		2	3	4	5	6	7	8	9
20	(-)(m)(-)(-)	min.8,5 5,7-5,9 **	300 325 ~	72 <u>+</u> 4 (7 (8) (9)	4,0 1.0	1210 1240-1250 1340-1380 1400-1460	(12) (13) (14)	100 800	20,5-21,5 9,5- 9,7
	5	0 - 1,0		40+5	.1		6	Switching po)(80-250)

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load d	elivery (19)	Full-load speed 8a	Variations delivery	in fuel (17)	Starting f	uel delivery		
Test oil ter	np. 40°C (104°F)		1	18		ļ	Difference	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strok	es
1	2	3	4	5	6	7	8	
800	66,4-68,4	1240-1250*			100	mind.134		(12a)
	(64,4-70,4)	(1235–1255)			300	15,8-19,8	3,5	
						(13,3-22,3)	(5,5)	15
								16

Checking values in brackets

less control rod travel than in Column 2

5.82

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung c. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH 1. Idle stage

4.0 + 0,25 mm

2. ++ At this engine speed the auxiliary idle spring must just touch. Idle delivery must not be changed.

estoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

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WPP 001/4 VOL 6,0 c 5. Edition

Ēη

PES 6 MW 100/320 R 11 RWV 300...1400 MW 14

0 413 206 002 0 420 093 007 supersedes 6.79
company
engine Volvo
D 60 A

Angular cam spacing see page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,40-2,50 (2,35-2,55)

mm (from BDC)

9,0-12,0 Control rod travel

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
800	8,4+0,2	4,8 - 5,0	0,35(0,6)			
300	5,7-5,9	1,5 - 1,9	0,35(0,55)			
			1			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated sp	eed		Upper rated sp	eed		Variations in co	ntrol rod trave	e1
Degree of deflection of control	effection travel f control			Control rod Rotational speed travel		Rotational speed		Control rod travel
lever	mm	rev/min	of control lever	mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
3	min.8,5 5,7-5,9 ** - 0-1,0	100 300 325 - 570	75+4 7 8 9 40+5 10	0,1-1,0	1440-1450 1510-1550	(12) (13) (14) (6)	100 - - Switching po 100~230	20,5-21,5 - - - (80-250)

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load o	lelivery (19)	Full-load speed 8a regulation	Variations delivery	in fuel 17	Starting f	uel delivery		•
Test oil ter	np. 40°C (104°F)			18			Difference	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 stro	kes
1	2	3	4	5	6	7	8	
800	48,9-50,9 (46,9-52,9)	1440-1450* (1435-1455)			100	min. 125		(12a)
					300	15,8-19,8 (13,3-22,3)	3,5 (5,5)	(15)
								16

Checking values in brackets

less control rod travel than in Column 2

BOSCH

D13

1. Angular cam spacing:

$$1 - 5 - 3 - 6 - 2 - 4 = 0 - 60 - 120 - 180 - 240 - 300° + 0.5 (0.75°)$$

2. Idle stage

4.0 + 0.25 mm

3. ++ At this engine speed the auxiliary idle spring must just touch. Idle delivery must not be changed.

Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 BOS 12,3 c 3
1. Edition

En

PE 6 P 120 A 821 LS 139

1 - 5 - 3 - 6 - 2 - 4 je 60°

RQ 300/1050 PA 518

supersedes

company:

MAN-BS

engine:

D 3256 BTXUE 169 kW (230 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,75-2,95)

mm (from BDC)

Rotational speed rev/min	Control rod travel	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,9	18,5 - 18,9	0,5(0,9)			
300 500	6,6-6,8	2,0 - 2,6 C, col.4-5	0,8(1,2)			
300		C, CO1.7-3				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking	g of slider	Full-load s	speed re	gulation		Idle spec	ed regula	ition		Torque o	\sim
PRG che	Control rod travel	Setting po	Control rod travel rom	Test spec Control rod travel mm	rev/min	Setting p	Control rod travel		1	rev/min	
1	2	3	4	5	6	7	8	9	10	11	12
500	15,6-16,4	500	16,0	_	1095-1110	ŀ	6,7	100	8,2	1	10,9-11,0
1350	0 - 1	 	<u> </u>	4,0	1135-1165			300	6,6-6,8		11,2-11,4
1330	0 - 1							390-	430 =2,0	500	11,5-11,7
	<u> </u>	<u></u>	<u> </u>	L		L	L	<u> </u>		<u> </u>	L

Torque control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop	Fuel delive	ery characteristics 3b	Starting fuel delivery Idle speed		
rev/min	cm³/-1000 strokes	rev/min 3	rev/min 4	cm ³ /~1000 strokes 5	rev/min 6	rod travel cm ³ /1000 strokes:/ mm 7	
LDA 1050	0,9 bar 185,0-189,0 (182,0-192,0)		LDA 500	0,9 bar 131,0-137,0 (128,0-140,0)	100	180,0-200,0	
			LDA	0 bar 116,0-120,0 (113,0-123,0)			

Checking values in brackets

10.80

BOSCH

D. Adjustment Test for Manifold Pressure Compensator

-2-

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

BOS 12,3 c

Pump/governor	Setting		Measurement		diminution Control rod travel- difference	
	Gauge pressure =	bar	Gauge pressure = t	bar	mm (1) ,	
139 with 518	0,9 bar				10,9 - 11,0	
			0,29		11,3 - 11,4	
			0,20		10,9 - 11,1	
			0		10,6 ⁻ - 10,7	

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Dia

Testoil-ISO 4113

Festoil-ISO 4113

Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 MAN 20,9 p 1. Edition

PE 12 P 110 A 520 LS 824

ROV 250-1150 PA 353 R

supersedes

company:

MAN D 2542 MTE

1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 - 12 0 - 15 - 60 - 75 - 120 - 135 - 180 - 195 - 240 - 255 - 300 - 315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

3,0 - 3,1		
2 05-2 15)	mm (from BDC)	•

Cv1.12

Lou cinsuid at bias	ITORE	(2,95-3,15)	mm (nom boc)			
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	13,4+0,1	12,9 - 13,1	0,4(0,8)			
250	8,9-9,1	1,4 - 2,2	0,4(0,7)			
			l		}	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

	peed rev/min Control rod travel mm	Control rod travel mm rev/min 28	Intermediate Degree of deflection of control lever		Control rod travel mm 4	Lower rated Degree of deflection of control lever 7	speed rev/min 8	Control rod travel mm 3	Sliding s rev/min 10	leeve travel 1) mm 11
max.	1150 1385	15,2-17,8 0 - 1,0		-	-	ca.11	100 250	min.7,5 5,9-6,1	200 500 850	0,6-0,8 3,1-3,5 5,9-6,1
ca.66	12,4 4,0	1190-1200 1320-1350					470-	530=2,0mm		8,1
						<u>3a</u>				

Torque control travel e =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		Imitation Intermediate speed	Fuel deliv high idle s	rery characteristics 5a	Starting idle switchir	. 0	Torque- travel	Control cod
rev/min	crh³/1000 strokes .	rev/min 4a	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
1150	129,0-131,0 (126,0-134,0)		* _	-	100	95,0-125,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.81

Test Specifications Fuel Injection Pumps (A) and Governors

WPP 001/4 MB 11.4 c 1. Edition

EP/RSV 350-1100 P 0/818R PES 6 P 100 A 820 LS266 *** Search for engine speed until 4.3 mm CRT attained and measure scatter!

supersedes.

company engine

Daimler-Benz 162 kW (220PS)

Position auxiliary idle spring at 1.5-2.0 mm CRT!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

Festoil-ISO 4113

(2,95-3,15)

mm (from BDC)

Cy1. 6

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ⁹ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ² /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1080	12,4	11,2 - 11,4	0,3(0,6)	THE CONTRACT OF THE CONTRACT O	on a many of the	
350	+0,1 6,1-6,3	1,2 - 1,8	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1	r rated speed Control rod travel mm		Interme	diate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm 9	9	rque control Control rod travel mm
loose	800	0,3-1,0				ca.28	350	6,2**	-	-
ca.51	11,4 4,3 1300	1130-1140 1200-1230 0,3-1,7					100 350 420-	min. 19 6,1-6,3 450=2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp. 40°C (104°F)	Rotational- speed limitat	3a Fuel delivery characteristics			tarting fu	iel delivery 5	C	stop Control rod
rev/min	cm ⁸ /1000 strokes 2	changed to) rev/min 3	rev/min 4	cm\1000 strokes 5	re 6	v/min	cm\$1000 strokes 7	rev/min 8	travel mm 9
1080	112,0-114,0 (110,0-116,0)	1130-1140*				***	15,0-15,5 4,3 max.4(6)		

Checking values in brackets

* 1 mm less control rod travel than col 2

12.77

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung c. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany In.primé en République Fédérale d'Allemagne par Robert Bosch GmbH.

OM 407

estoil-ISO 4113

Test Specifications Fuel Injection Pumps (2) and Governors

WPP 001/4 MB 19,1 L2 1. Edition

PE 12 P 100 A 320 LS 828

RO 1150 PA 310 R

supersedes

company:

Daimler-Benz

engine:

OM 404 294kW(400PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

 $0 - 45 - 60 - 105 - 120 - 165 - 180 - 225 - 240 - 285 - 300 - 345^{\circ} + 0,5^{\circ}$

A. Fuel Injection Pump Settings 3,20-3,30 Port closing at prestroke (3,15-3,35)

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7

mm (from BDC)

Cy1.12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	11,5+0,1	9,9 - 10,1	0,3(0,6)			
350	7,4-7,6	0,5 - 1,1	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

	Checking of slider Full-load speed regulation FRG check 1 Setting point Test specifications			cifications (4)	Idle speed regulation Setting point Test specifications 5							
rev/min	Control rod travel mm 2		rev/min 3	Control rad travel mm	Contral red travel mm 5	rev/min		Control rad travel rnrn 8	rev/min 9	Control rod travel mm		Control rod travel mm 12
-	-		-	-		1155-1160 1200-1210	-	•	-	-	-	-

Torque-control travel on flyweight assembly dimension a =

1155-1160 min⁻¹ Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop	Fuel delivery characteristics			Starting for Idle spee	Control
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5		rev/min 6	cm ³ /1000 strokes mm
1130	99,0 - 101,0 (97,0 - 103,0)	~~	-	_		1205	16-17 mmRW high idle speed 4,6-4,8 mm RW 4,0(6,0)cm³/1000 dispersion

Checking values in brackets

4.81

BOSCH

Test Specifications Fuel Injection Pumps 2 and Governors

WPP 001/4 MAN 11,1 r

1. Edition

Testoil-ISO 4113

PES 6 P 120 A 720 LS 388

RO 750 PA 556

supersedes

MAN

company:

D 2566 MLE

6 - 2 - 4 - 1 - 5 - 3 0 -60 -120-180-240-300 engine:

180 kW (245 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

3.00-3.10

mm (from BDC)

RW 10,5

Rotational speed rev/min 1	Control rod travel • mm 2	Fuel delivery cm³/100 strokes	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5	20,9 - 21,3	0,5(0,9)			
	+0,1				!	
250	6,3-6,5	1,2 - 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

	Checking of slider PRG check Setting point		int	Test spec	cifications (4)	Idle speed regulation Setting point Test specifications 5				Torque control			
rev/min	control rod travel mm	_	rev/min 3	Control rod travel mm 4	Control rod travel rnm 5	rev/min		Control rod travel mm	1	Control rod travel mm	rev/min	Control rod travel mm 12	
					11,5 4,0 0-1,0	750-755 775-785 900							

Torque-control travel

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop	Fuel delivery characteristics			Starting for spee	d Control
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5		rev/min 6	red travel cm ³ /1000 strokes:/ mm 7
700	209, 0 - 213, 0 (206, 0 - 216, 0)						

Checking values in brackets

12.80

Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 FIA 13,8s 1. Edition

PES 6 P 120 A 820 LS 249

RQV 300-1000 PA 204/4 300- 975 PA 202/4, 226/4

300- 925 PA 204/4

supersedes

Fiat company:

8217.12

Testing with T nozzles and fuel lines 8x2x1000 according

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings 2,00-2,10 (1,95-2,15) mm mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	22,9 - 23,7	1,0			
600	9 1 5	11,1 - 12,6 29,8 - 32,4				
200	9	9,6 - 11,2		c		

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

300-1000

Upper rated s				Intermediate	rated spe		Lower rated	speed	1	Sliding sleeve travel	
deflection of control	rod travel	Control rod travel mm rev/min	(1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travei	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	(1)
1	2	3		4	5	6	7	8	9	10	11
ca.66		14,8-17 10,8-14 3,0- 9 0	,6	400	-	-	ca.10	200 300 400	6,8-8,0 3,4-5,8 1,1-2,2	1040	8,3
							(3a)				

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel deliv	very characteristics 5a	Starting Idle switchir		Torque- travel	control 5	
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	travel mm	
1	2	3	4	5	6	7	8	9	
1000	122,0-124,0 (119,0-127,0)	1040-1050*			,				
								./.	

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.81

Testoil-ISO 4113

	300-	-975	٠

B. Gov	ernor	Settin	gs					3	300-975		Pe 249
Upper rated	speed			Intermediate	rated spe	ed	Lower rated	speed		Sliding sl	eeve travel
Degree of deflection	Control	Control rod travel	(1a)	Degree of deflection		Control rod travel	Degree of deflection of control		Control rod travei		1
of control lever	rodtravel mm	ten/wiu	(2a)	of control lever	rev/min	mm 4	lever	rev/min	mm 3	revimin	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68	975 1250	15,2-17 0 - 1		-	-	-	ca.14		min.7,5 5,9-6,1	1035	8,4
ca.58		1015-10 1115-11						300-	395=2,0	-	-
							(3a)				

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem	stop	Rotational-speed (2b) limitation intermediate speed	Fuel deliv	ery characteristics 5a peed 5b	Starting fuel delivery Idle switching point		Torque- travel	control 5 Control rod
rev/min	cm ⁹ /1000 strokes	rev/min 4a	rev/min	cm ³ /1000 strokes	rev/min	cm3/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	/	•	3
ca.10	5 mm RW	990			100	19,5-21 mmRl	V	
					300	22,0-28,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

300-925

Upper rated s	peed			Intermediate	rated spe	ed		Lower rated	speed		Sliding s	leeve travel
		Control rod travel	(ta)	Degree of deflection		Control ro travel	d	Degree of deflection of control		Control rod travel		1
of control lever	rod travel mm	tes/win	(2a)	of control lever	rev/min	mm	4	lever	rev/min	mm 3	rev/min	mm
1	2	3		4	5	6		7	8	9	10	11
ca.68	925 1200	15,2-17 0 - 1	_ 1		-	-		ca.14		min.7,5 5,9-6,1	960	8,3
ca.59	9,5 4,0	965-975 1035-10	65						300-3	395=2,0		
								38				

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		Rotational-speed (2b) Ilmitation Intermediate speed	Fuel deliv	very characteristics 58 speed 56	Starting Idle switchir	fuel delivery 6	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 3	rev/min	cm ³ /1000 strokes	rev/min 6	cm ⁴ /1000 strokes 7	rev/min 8	travel mm 9
ca.	10,5 mm RW	940			i	19,5-21 mmRW 22,0-28,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

Festoil-ISO 4113

1. Edition

PES 6 P 110 A 320 RS 317

RQV 375-1100 PA 247 KR

supersedes

company:

Allis Chalmers

engine:

Typ: 11000

Test instructions for RQV ... K governors WPP 001/4-3rd supplement

-Testing with EFEP 182 ("S-nozzles)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8+0,1

mm (from BDC)

(+ 0,15)

					- 0,03	
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	16,1 - 16,8	0,7			
600 600 600 200	9 12 15	8,4 - 9,6 15,1 -16,6 21,3 -23,2 6,8 - 8,0				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated	speed			Intermediate	ntermediate rated speed				speed		Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min 3	(3) (2)	Degree of deflection of control lever	rev/min	Control rod travel mm	0	Degree of deflection of control lever	rev/min	Control rod traval mm 3	rev/min	mm
ca.66	1130 1200 1300 1390	15,0-17, 9,0-13, 0 - 7 0		•	-	-		ca.20	300 400 600 850	9,6-12,7 4,8- 6,4 2,8- 4,1 0	300 400	0 - 1,4 2,8-3,4 5,0-5,4 8,3

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil terr		Rotational-speed 2b limitation intermediate speed	Fuel deliv		ics Sa Starting fuel delivery (Idle switching point					Torque- travel	Control roo
rev/min	cfh³/1000 strokes .	rev/min 4a	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strakes	rev/min	travei mm			
<u>'</u>	4	3	4	5	6	7	8	9			
LDA 1090	0,6 bar 138,0-140,0	1145-1155*	LDA 600	0,6 bar 151,0-157,0	100	80,0-120,0					
			LDA 600	0 bar 100,0-108,0		118,0-128,0					
				Char	ige-ov	er point 200	-300	U/min			

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.75

E13

BOSCH

D. Adjustment Test for Manifold Pressure Compensator

Testatn =

500 rev/min decreasing pressure – in bar gauge pressure

ALO 8,5 c

-2-

Setting		Measurement	diminution Control rod travel- difference
Gauge pressure =	bar	Gauge pressure = ba	r mm (1) .
0,12			2,1 - 2,2
		0,41	0,2 - 0,4
	,		
	Gauge pressure =	Gauge pressure = bar	Gauge pressure = bar Gauge pressure = bar 0,12

Notes:

(1) when n =

600

rev/min and gauge pressure = 0.6

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 12,7 b

4. Edition

estoil-ISO 4113

PE 8 MW 100/720 LS 1010 RQ 300/1150 MW 17 Komb.-Nr. 0 403 548 001 supersedes 5.82 company: KHD

engine: BF 8 L 413 F

212 kW (288 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC) (3,05-3,25)RW = 9.0-12.0 mmRotational speed Control rod Fuel delivery Difference Control rod Fuel delivery Spring pre-tensioning travel travei (torque-control valve) cm³/ rav/min cm³/100 strokes 100 strokes mm cm3/100 strokes mm 750 12,2+0,1 13.1 - 13.30.35(0.6)300 6,3-6,51,2-1,6 0,35(0,55) 500 9,9-10,00,55(0,7)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

	PRG che	Control rod	Full-load s Setting po rev/min 3	•	_	rev/min		Control rod travel	Test spe	cifications 5 Control rod travel mm 10		Control rod (3) travel mm
	650	18,2-20,8	650	19,0	9,2	1195-1210	300	6,4	100	min.7,8	1150	10,2-10,5
Cont	rol le 1400	ver = 40° 0,0-1,0			4,0	1240-1270			300 2,0	6,3-6,5 365-405	1050 750	11,2-11,4 12,2-12,3

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	วแบ			
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes		rev/min	Control red travel cm ³ /1000 strokes:/ mm	
LDA 750	0,74 bar 131,0-133,0 (129,0-135,0)		LDA 500	0 bar 87,5-89,5 (85,5-91,5)		100 300	136,5-146,5 (133,5-149,5) 12,5-16,5 (10,0-19,0)	

Checking values in brackets

12.85

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung.
9: 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany.
Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

KHD 12,7b

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
LS 1010 MW 17	0,16	0,50 0,74 0	10,3-10,5 11,8-11,9 12,2-12,3 9,9-10,0

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Test electrically unlocked starting delivery with 24 V.

estoil-ISO 4113

Test Specifications Fuel Injection Pumps 2 and Governors

WPP 001/4 MAN 11,1 o 2. Edition

(1)

(2)

PES 6 P 110 A 720 LS295 LS345 250/1050 PA335DR 250/1050 PA335DR supersedes 8.77 MAN

company: D 2566MTF (1) engine:

LS345

ROV 250-1050 PA373DR (3)

D 2566MTUH (2-3)

(275 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2.95-3.15)

mm (from BDC)

Rotational speed rev/min 1	travel (1-2) mm cm³/100 strokes cm³/ 2 3 4		Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery (3) cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,3	15,0 - 15,2	0,4(0,8)	12,1	15,0 - 15,2	
250 700/500	(+ 0,1) 6,9-7,1 -	0,7 - 1,3 C, co1.4-5	0,4(0,7)	(+ 0,1) 6,8-7,0	0,9- 1,5	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQ..335DR (1-2)

i	PRG check Control rod		Full-load speed regulation Setting point Test specifications (Idle speed regulation Setting point Test specifications (5)						
rev/min	travel	rev/min 3	Control rod travel mm 4	Control rod travel mm	rev/min 6	rev/min 7	Control rod travel rnm 8	rev/min 9	Control rod travel mm	I	Control rod travel mm 12	
600	19,2-20,8	600	20,0	11,3	1095-1110	250	7,0	100	min.8,5	1050	12,3-12,4	
1050	sreakaway	(Cont lever ca.49		4,0	1155-1185			250 365-3	6,9-7,1 95 =2,0	700 500	12,8-12,9 11,5-11,6	
1300	0 - 1	Ca.43						500	0 - 1			

Torque-control travel on flyweight assembly dimension a =

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	lelivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ary characteristics 3b	Starting f	uel delivery d Gontral
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	contravel cm ³ /1000 strokes:// mm 7
LDA 1050	0,7 bar 150,0 - 152,0		LDA 700	0,7 bar 157,0 - 161,0	100	215 - 235
	(147,0 - 155,0)		LDA 500	0.2 bar 123,0 - 127,0	250	9 - 15
(Col.	4-5 inrease by ±	3 cm³)	LDA 500	0 bar 111,0 - 113,0	100-	170 (80-190)

Checking values in brackets

2.79

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated speed			Sliding sl	eeve travel
deflection	rev/min Control rod travel mm	mm		Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm 3		mm 1
1	2	3		4	5	6	7	8	9	10	11
ca. 68	1050 1400	15,2-17, 0 - 1	,8	-	-	-	ca.16	100 250		1100	0,6-1,6 8,3
ca. 66	11,1 4,0	1090-110 1280-131					(3a)	700	·580 =2,0 0 - 1		

Torque control travel a = - mm See col. 10-11

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil terr		Rotational-speed (2b) limitation intermediate speed	Fuel deliv character high idle s	ristics	Starting Idle switchir	fuel delivery 6	Torque- travel + 0	control 5
rev/min	cm ³ /1000 strokes	rev/min (4a)	rev/min	cin ³ /1000 strokes		cm³/1000 strokes	rev/min	travel mm
<u>'</u>	2	3	4	5	6	7	8	9
LDA 1050	0,7 bar 150,0-152,0 (147,0-155,0)	1090-1100*	LDA 700 LDA 500	0,7 bar 157,0-161,0 0,2 bar 123,0-127,0	100 250	215 - 235 11 - 17	1050 850	12,1 12,4
(Col.4	-5 inrease by	± 3 cm³)	LDA 500	111,0-113,0	100-	170 (80-190)	700	12,8

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

rev/min decreasing pressure ~ in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel		
With the second	Gauge pressure = bar	Gauge pressure = bar	bar mm		
295 345 with 335DR	`0,68		12,3 - 12,4		
		0,32 0,20 0	12,3 - 12,4 11,5 - 11,6 10,9 - 11,0		
345 with 373DR	0,68	0,32 0,18 0	12,8 - 12,9 12,3 - 12,4 11,3 - 11,5 10,9 - 11,0		

Test Specifications Fuel Injection Pumps (A) and Governors

40

VDT-WPP 001/4

2. Edition

PE 6 P 130/721 RS 230 PE 8 P 130/921/4 RS 231 PE 12 P 130/921 RS 232

EP/RSUV 250-750 P 9/317 250-750 P 9/313 250-750 P 9/313 supersedes company engine

8.72 Henschel 1516

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

Festoil-ISO 4113

mm (from BDC)

Rotational speed rev/min	travel	vel		Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12	28,7 - 29,4	1,2			
200	6 15 6	12,4 - 13,9 35,0 - 37,5 7,5 - 8,4				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(basic adjustment-control lever 35°)

	r rated speed Control rod travel mm		Intermed	liate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm	9	que control Control rod travel mm
ca.54	750 760 770	16,0 12,5 8,4	with spri	out au ng	ıxilia	ca.20 ry	250 50 250	7,0 19 - 21 6,7-7,3	730	0
2 a	770 800 880	6,0-10,2 3,2-4,2 0,3-1,0		with auxiliary spring			325 380	1,4-4,0	280	1,2-1,8

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat		el delivery aracteristics	Starting fuel delivery 5 4a idle stop			
revilain	emp 40°C (104°F) cm³/1000 strokes	Note: changed to) rev/min 3	rev/min	cm¥1000 strokes	rev/min	cm ² 1000 strokes 7		travel mm
(ca.	10 mm RW)							
Full	load see HEN!							
			 					./.

Checking values in brackets

* 1 mm less control rod travel than col 2



Cam sequence and angular cam spacing.

$$1 - 5 - 3 - 6 - 2 - 4 \text{ je } 60^{\circ}$$
 (230)

$$0 - 30 - 90 - 120 - 180 - 210 - 270 - 300^{\circ}$$

Testing with T nozzles and fuel lines 8x2x1000 according

Festoil-ISO 4113

Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 FIA 13,8 Li 1. Edition

PE 8 P 120 A 920/5 LS 3804 Z

RQV 300-1050 PA 552

supersedes

1 - 8 - 4 - 3 - 6 - 5 - 7 - 2

 $45^{\circ} \pm 0,5^{\circ} (0,75^{\circ})$

company: engine.

Fiat 8285, 22, 002

242,7 kW (330 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strakes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,1+0,1	20,7-21,1	0,5(0,9)			
300	5,9-6,1	2,8- 3,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [

B. Governor Settings

Upper rated s	peed	1		Intermediate	rated sp	eed	Lower rated	speed		Slidings	leeve travel
deflection	rev/min Control	Control rod travel	(10)	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel	Chang :	1
of control lever	rod travel mm	mm rev/min	(2B)	of control lever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68	1050		-				ca.11	300	6,0	300	1,6-1,7
	1350	0 - 1	,0					100	min.7,5	410	3,1-3,7
ca.64	10,1 4,0	1090-11 1180-12					310-410			1100	8,6-8,8
							3 a				

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter rev/min	d stop mp. 40°C (104°F) 2	Rotational-speed (2b) Fuel delivery characteristimitation intermediate speed rev/min (4a) rev/min (cm³/1000 strot			Starting Idle switchin	ng point	Torque- travel	Control 5 Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1050	0,7 bar 207,0-211,0 (204,0-214,0)	1090-1100*			100	215,0-245,0		
LDA 1050	0 bar 149,0-153,0 (146,0-156,0)							

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

FIA 13.8 1 1

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
3804 Z with	0,7		11,1 -	11,2
552		0,29	10,2 -	10,3
		0,25	9,0 -	9,3
		0	8,5 -	8,6

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

il-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 16,0 b 1
1. Edition

En

PE 10 P 100 A 320 LS 817 520/5

RQV 350-1250 PA256D

supersedes company:

16,0b (5.74) Daimler-Benz

PE 10 P 100 A 320 LS806

RQ 750 PA 214 ./.

engine:

OM 403

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

,80-2,90 ,75-2,95) mm (from BDC)

Cy1. 10

	2.75-2.95) Fuel delivery	Difference	Control rod	Sual delivery	
nm 2	cm ³ /100 strokes 3	cm ³ / 100 strokes 4	travel	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
12	8,1 - 8,8	0,4	12	6,9 - 7,3	
9 12 15 9	2,7 - 3,7 6,3 - 7,5 10,9 -12,4 0,5 - 1,4		Pe 806	with governor	214
31	12 9 12 15	3 12 8,1 - 8,8 9 2,7 - 3,7 12 6,3 - 7,5 15 10,9 -12,4	12 8,1 - 8,8 0,4 9 2,7 - 3,7 12 6,3 - 7,5 15 10,9 -12,4	100 strokes mm 2 12 8,1 - 8,8 0,4 12 9 2,7 - 3,7 12 6,3 - 7,5 15 10,9 -12,4 Pe 806	12 8,1 - 8,8 0,4 12 6,9 - 7,3

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

350 - 1250

Upper rated s	speed	•		Intermediate	rated sp	eed	Lower rated	speed		_	
deflection	rev/min Control rod travel mm	Gontrol rod travel mm rev/min	0	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel	Sliding s	mm
62 60	1200	44 4 47		4	5	6	7	8	9	10	11
ca.68	1280 1320 1380 1440	8,4-13 0 - 6		-	-	-	ca.14	200 350 500	8,5-9,8 5,0-7,0 2,8-4,5	1280	8,3
	1440	· ·						610	0		
							(3a)				

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter	elivery d stop np. 40°C (104°F) 2	Rotational-speed 2b limitation intermediate speed	Fuel deli high idle :	rery characteristics 58	Starting Idie switchii	. 0	Torque- travel	control 5
rev/min T	cm³/1000 strokes	rev/min 4	rev/min 4	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	travel mm
1250	93,0-95,0	1290-1310 di:	1360 Spersi	-1370:5mmRW on max.6	100 Char 300-	11,0-13,0 ge-over point 230 U/min		9

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Sc	ettings	750		MB 16,0) b 1 -2-
Checking of slider PRG check Control rod travel rev/min 1 2	Full-load speed re Setting point Control rev/min 3	gulation Test specifications Control rod travel mm rev/min 5 6	Idle speed regi	Test specifications 5	Torque control Control rod travel mm 11 12
approx. 32	eflection	650 20,0-21,0 700 16,0-19,5 750 9,8-11,6 820 0			
Move control le attained (CL ap	ver forwar prox. 32°)	ds until with p then set init	ump stopp ial tensi	ed 21 mm contro on of spring.	l-rod travel is

Torque-control travel on flyweight assembly dimension a =

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3	Fuel delive	ery characteristics	Starting fi	uel delivery d Control
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm ³ /-1000 strokes	rev/min	cm ³ /1000 strokes / mm 7
730	69,0 - 71,0				100	11,0 - 13,0
750 -	- 760: 1 mm RW le	ss				
765 -	- 780: 5,7 mm RW	dispersion max.	6	1	de de number e	
					The state of the s	
					The state of the s	
			İ			

Checking values in brackets

B. Governor Settings

Checkini PRG che rev/min 1	Control rod travel	1	Full-load s Setting po rev/min 3	•	_	rev/min	Idle spee Setting p rev/min 7	_	cifications 5 Control rod travel	rev/min	Control rod (3)

Torque-control travel on flyweight assembly dimension a =

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp 40°C (104°F)	Control rod stop	Fuel delive	ery characteristics	3 b	Starting fill Idle spee	Contrel
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm³/-1000 strokes		rev/min	rod travel cm ³ /1000 strokes / mm
	2	3					
						į I	

En Checking values in brackets

Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 19,1 e 1. Edition

PE 12 P 110 A 320 LS832

ROV 350-1150 PA 389R

supersedes

 $12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 \pm 0,5$

company:

Daimler-Benz

 $0 - 45 - 60 - 105 - 120 - 165 - 180 - 225 - 240 - 285 - 300 - 345 (<math>\overline{0}, 75$)

engine: OM 404 A

** Set lower delivery at inner lever!

(525 PS) 386 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Cy1.12

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	13,4	14,0 - 14,2	0,4(0,8)			
350 500/1130**	(+0,1) 7,0-7,2 	1,6 - 2,2 C, col.4-5	0,4(0,7) 0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

_ ' '	Upper rated speed			Intermediate	rated spe	1	Lower rated	speed	Control rod	Sliding s	leeve travei
deflection of control	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	(a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	travel mm 3	rev/min 10	(1) mm 11
ca.67	1150 1400	15,2-17, 0 - 1	8	-	-	-	ca.18	100 350	min.8,6 7,0-7,2	300 1170	0,3-1,3 8,3
ca.66		1185-119 1245 - 12			:			690-7 900	50 = 2,0 $0 - 1$		
							(3e)				

Torque control travel a =

C. Settings for Fuel injection Pump with Fitted Governor

Full-load d Control-roo		Rotational-speed 2b timitation intermediate speed	Fuel deliv	ery characteristics 5a	Starting Idle switchin	<u> </u>	Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm ³ /1000 strokes 5	rev/min	cm³/1000 strokes	rev/min 8	travel mm 9
LDA 1130	0,7 bar 140,0-142,0 (137,0-145,0)	1185-1195* **	LDA 500 1130	0 bar 103,0-107,0 (100,0-110,0) 100,0-102,0 97,0-105,0)	1260 disp	110,0-130,0 6,7-6.9mmRW ersion max. 6 -270 (90-290)	(9)	

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.77

BOSCH

D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

MB 19,1 e

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
832 with 389R	0,68		13,4 - 13,5
		0,48	13,0 - 13,1
		0,33	12,0 - 12,2
		0	11,7 - 11,8

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 20,9 f 1. Edition

Festoil-ISO 4113

PE 12 P 110 A 520 LS824

RQ 900 PA404R

(1)

supersedes M A N company:

RZU 750 P 1/15R (2)

engine: D2542 MTE

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 0 -45 -60 -105-120-165-180-225 -240 -285-300-345°

(1-Nr.7003-287kW-390PS) (2-Nr.7003- -)

 $+0.50~\left(+0.75\right)$ All test specifications are valid-for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Cy1.12

Port closing at prestroke

2 95-3 15

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery m. 404R (1) cm³/100 strokes 3	Difference cm ³ / 100 strokes	Control rod travel mm 2	Fuel delivery m. 1/15R (2) cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	13,0-13,	1 13,0 - 13,2	0,4(0,8)	4,7-14,8	16,3 - 16,6	n = 700
250	7,4-7,6	1,1- 1,7	0,4(0,7)	8,9-9,1	1,4- 2,2	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

404R (1)

Upper rated a	Upper rated speed				Intermediate rated speed			speed	Sliding sleeve travel		
deflection	rev/min Control rod travel	(1940)	וש	Degree of deflection of control		Control rod travel	Degree of deflection		Control rod travel	Cilcing 3	1
lever		rev/min		lever	rev/min	mm 4	of control lever	rav/min	mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
											•
ļ	12,0	900-905									
	6,7	927-936						1	•		
	,,,	32, 300									
							3a)				

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed 2b limitation intermediate speed	Fuel deliv	very characteristics 5a speed 5b	Starting Idle switchir	\mathbf{O}	Torque- travel	control 5
rev/min 1	cm³/1000 strokes	rev/min 49	rev/min	cm ³ /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
850	130, 0-132, 0 (127, 0-135, 0)				100	95, 0-125, 0		
				dis	931 Persid	6,7 mm RW on max4(9)		./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.79

			_						(2) 1/1	<u> </u>	
Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed		Sliding el	eeve travel
Degree of deflection of control		travel	\smile	Degree of deflection of control		Control rod travel	Degree of deflection	Ì	Control rod travel	Siturity a	1
lever	mm	rev/min (rev/min	mm 4	of control lever	rev/min	mm ③	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
	13,7	750									
	6,5	772~780									
		•									
	<u> </u>						(3a)				

Torque control travel a =

, ww

C. Settings for Fuel Injection Pump with Fitted Governor

Full-toad de Control-rod Test oil tem rev/min	stop p. 40°C (104°F) 2 cm ³ /1000 strokes	Rotational-speed (2b) imitation intermediate speed rev/min	high idle s	peed 5b cm ² /1000 strokes	Starting Idle switchin	ng point	Torque- travel	Control cod travel
700	163, 5-165, 5 (160, 5-168, 5)		4	5	100	⁷ 19,5-21mmRW	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed		Slidings	leeve travel
Degree of deflection of control	rev/min Control rod travel	Control rod travel	(ta)	Degree of deflection of control		Control rod travel	Degree of deflection of control]	Control rod travel	Siloning's	1
lever		rev/min	(2a)	lever	rev/min	mm 4	lever	rev/min	mm ③	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
											•
							За				

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

-10	Full-load de Control-rod Test oil tem	livery stop p 40°C (104°F) (2)	Rotational-speed (2b) timitation intermediate speed	Fuel delightightightightightightightightightight	very characteristics 5a speed 5b	Starting Idle switching		Torque- travel	control 5
1	វន ^{្តរ} mın	cm³/1000 strokes	rev/min 4a	rev/min	cm ³ /1000 strokes	rev/min	cm ⁴ /1000 strokes	rev/min	Control rod travel mm
Į	1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 411

Test Specifications Fuel Injection Pumps 2 and Governors

WPP 001/4 FIA 13,8 r 2. Edition

RQ 250/1200 PA 474 R PE 8 P 120 A 920/5 LS 3804

supersedes company:

2.81 FIAT

engine:

8280.22.002

331 kW (450 PS)

1 - 8 - 4 - 3 - 6 - 5 - 7 - 2 je $45^{\circ} \pm 0.5^{\circ}(\pm 0.75^{\circ})$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

mm (from BDC) Port closing at prestroke

Rotational speed rev/min	Control rod travel mm 2	(3,45-3,65) Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,6+0,2	24,3 - 24,7	0,5(0,9)			
300	4,9-5,	1,9 - 2,5	0,8(1,2)			
•						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

PRG che	Control rod travel	Full-load : Setting por	•		rev/min	Idle spee Setting p	Control rod travel mm	Test spe	cifications 5 Control rod travel mm	rev/min	Control rod (3)
leve		650	20,0	10,6 4,0 1400	1245-1260 1280-1310 0 - 1,0		5,0	100 300 355-	min.6,5 4,9-5,1 395=2,0mm	650	11,6+0,1 11,6+0,2
ca.	46°)										

Torque-control travel on flyweight assembly dimension a

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever pp. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting for	uel delivery d Control
rev/min	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	rod travel cm ³ /1000 strokes:/ mm 7
LDA 1200	0,7 bar 243,0 - 247,0 (240,0 - 250,0)	-	LDA 1200	0 bar 160,0-164,0 (157,0-167,0)	100	210,0-240,0

Checking values in brackets

1.82

BOSCH

D. Adjustment Test for Manifold Pressure Compensator

FIA 13,8 r

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

PE8PLS3804 withPA474R 0,7 0,11,6 - 11,7 0,8,5 - 8,6 10,8 - 10,9 0,35 0,35 0,2 - 9,5	Pump/governor	Setting	Measurement	Contr	diminution of rod travel- difference
withPA474R 0 8,5 - 8,6 0,44 10,8 - 10,9		Gauge pressure =	par Gauge pressure =	bar mm	(1) ,
0,44 0,8 - 10,9			0,7		11,6 - 11,7
	withPA474R		0		8,5 - 8,6
0.35 9.2 - 9.5		0,44			10,8 - 10,9
			0,35		9,2 - 9,5
				Ì	

Notes.

(1) when n =

revimin and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 9,6 c 2. Edition

EŊ

PE 6 P 100 A 320 LS 825

RQ 300/1150 PA187R

RQV300-1150 PA227R

supersedes

8.77

company; engine: Daimler-Benz

OM 401

(144kW - 196PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(3,15-3,35)

mm (from BDC)

		(3,13 3,33)	······ (ii oiii obc)			
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1150	12.0	10.2 - 10.4	0,3(0,6)			
	(+0,1)					
300	8,4-8,6	1,3 - 1,9	0,3(0,5)			
600		C, col.4-5	0,4(0,7)		\$	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQ.. 187R

Checkin PRG che	() /	Full-load : Setting po	oint	Test spe	cifications (4)	Idle spe	-		cifications (5)	Torque (control 3
rev/min	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control red travel rnrn 5	rev/min	rev/min 7	Control rod travel rmm	rev/min 9	Control rod travel	rev/min	travel
600	13,8-14,6	600	14,2	11,0	1195-1210	300	8,5	100	min.10	•	-
1170 1400				4,0	1250-1260			300 430- 600	8,4-8,6 170 =2,0 0 - 1		

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting f	ruel delivery
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /~1000 strokes 5	rev/min 6	Control rod travel cm ³ /1000 strokes:/ mm
1150	102,0 - 104,0 (100,0 - 106,0)	500	600	88,0 - 93,0 (86,0 - 95,0)	100	110,0 - 130,0
						•/•

Checking values in brackets

9.78

BOSCH

Geschaftsbereich KH. Kundendienst. Kt2-Ausrüstung. © 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany. Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

B. Governor Settings

											<u> </u>
Upper rated s	peed			Intermediate	rated spe	eed	Lower rated	speed		Sliding	ceve travel
Degree of deflection of control	Control	Control rod travel	(1a)	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel	Silung s	1
lever	rodtravel mm	rev/min	(2a)	of control lever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3	_	4	5	6	7	В	9	10	11
ca.68		15,2-17,	8	-	-	-	ca.12	100	min.10	300	0,4-1,5
	1450	บ ~ เ						300	8,4-8,6	800	4,4-4,8
ca.64	11.0	1190-120	0					400	2 - 4	1250	8,3
		1270-130						700	0 - 1		
							(3a)				

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem	stop	Rotational-speed (2b) limitation intermediate speed	Fuel delic high idle s	very characteristics 5a speed 5b	Starting Idle switchir		Torque- travel	control 5
rev/min	cm ⁴ 1000 strokes 2	rev/min 4a	rev/min	cm ³ /1000 strokes 5	rev/min 6	cm3/1000 strokes	rev/min 8	travel mm
1150	102,0-104,0 (100,0-106,0)	1190 - 1200*			100	110,0-130,0		
					100	-220 (90-240)		

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

Upper rated s	speed			Intermediate	rated spe	ed	Lower rated	speed		Christian	la ava daaval
Degree of deflection of control lever	rod travel mm	rev/min	(1a) (29)	Degree of deflection of control lever	rev/min	Control rod fravel mm 4	Degree of deflection of control lever	Ī	Control rod travel	rev/min	mm
<u> </u>	2	3		4	5	0	/	8	9	10	11
<u> </u>				,							
									•		
		:					(3a)				
]	

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter	lelivery d stop mp 40°C (104°F) 2	intermediate speed	Fuel deli high idle :	very characteristics 5a speed 5b	rule	fuel delivery 6	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min (4a)	rev/min	cm ³ /1000 strokes		cm ⁸ /1000 st∷kes	rev/min	travel mm
<u> </u>	12	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4

3. Edition

PES 6 P 120 A 420 RS 238 RO 30

RQ 300/1100 PA 193 DR RQV250-1100 PA 194 DR** supersedes 1.73, 2.74

Testing with T nozzles and fuel lines 8 x 2 x 1000!

company: Saurer D 2 KT (330 PS)

1 - 4 - 2 - 6 - 3 - 5 je 60°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Cy1.1 $\binom{+0,15}{-0,05}$

Port closing at prestroke

2,8 + 0,1

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel defivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	24,9 - 25,6	1,0			
600	6 12 15	5,9 - 7,1 20,8 - 22,6 30,6 - 33,0				
200	6	3,7 - 4,7				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQ ... PA 193 D

PRG che	Control rod travel	Full-load s Setting po rev/min	•	•	rev/min	Idle spec Setting p rev/min	Control red travel	Test spe	cifications Control rod travel mm	rev/min	Control rod (3)
650	15,7-16,3	650	16,0	1120 1160 1200 1270	0 - 8,8		0		7,1-8,1 5,3-7,4 3,2-5,4 0	750 1050	15,8-16,0 14,8-15,1

Torque-control travel on flyweight assembly dimension a =

0,35 _{mm}

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever	Control rod stop	Fuel delive	ery characteristics 3b	Starting for	
rev/min	cm³/-1000 strokes	rev/min 3	rev/min	cm ³ /-1000 strokes 5	rev/min 6	Control red travel cm ³ /1000 strokes:/ mm 7
LDA	0,7 bar		LDA	0,7 bar	100	22,0-24,0
1100	206,0-208,0 0 bar = 2,0 + (,1 mm RW less	700	178,0-182,0		e-over point 30 U/min
						./.

Checking values in brackets

10.75

BOSCH

Upper rated	speed			Intermediate	rated spe	ed	Lower rated	speed		Sliding st	eeve travel
Degree of deflection of control lever		Control rod travel mm rev/min	(a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm 3		mm
ca.68	1100 1150 1200 1280 1360	15,0-18 11,0-18 6,6-11 0 - 6	5,0				ca.12	180 250 350 490	6,4-8,0 3,7-6,1 1,9-3,3 0	1100	8,2

Torque control travel a =

B. Governor Settings

O mn

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem	stop	Rotational-speed (2b) limitation intermediate speed	Fuel deliv high idle s	ery characteristics 5a peed 5b	Starting I Idle switchin	\sim	Torque- trave!	Control roc
rev/min	cm ^{\$} /1000 strokes 2	rev/min 4a)	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm3/1000 strokes 7	rev/min 8	travel mm
LDA 1100	0,7 bar 206,0-208,0 0 bar=2,0 +	LDA 0,7 bar 1130 0,1 mmRW les	LDA 700	0,7 bar 178,0-182,0		22,0 - 24,0 ge-over point 130 U/min		

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

Upper rated s	speed			Intermediate	rated spe	ed	Lower rated	speed			Sliding sl	eeve travel
Degree of deflection of control lever	Control rod travel	Control rod travel mm rev/min	(1a) (2a)	Degree of deflection of control lever	rev/min	travel	Degree of deflection of control lever	rev/min	Control ro travel	(3)	rev/min	mm 1
1	2	3		4	5	6	7	8	9		10	11
							(3a)					

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter rev/min	elivery d stop np 40°C (104°F) cm³/1000 strokes	Rotational-speed 2b Ilmitation intermediate speed 4a	Fuel deliv high idle s	very characteristics 5a speed 5b cm³/1000 strokes	switchir	fuel delivery 6 ng point cm ⁹ /1000 strokes	Torque- travel	Control 5 Control rod travel
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps 2 and Governors

VDT-WPP 001/4

3. Edition

PE 8 P 110 A 920/5 LS 822

RQ 250/1200 PA 290 R RQV 250-1200 PA 299 R* supersedes

11.75 Fiat

RQV 250-1200 PA 328 R

company: engine:

8280.01.000

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,8 + 0,1

mm (from BDC(+0,15)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	8,4 - 9,1	0,4			
600	9 15	2,4 - 3,4 11,9 - 13,4				
200	9	0,2 - 0,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQ .. 290 R

Checkin PRG che rev/min 1	Control rod travel	Setting po	•	ontrol Control d travel rod travel		Idle spec Setting p rev/min 7	Control rod travel	Test spe	cifications 5 Control rod travel mm 10	rev/min	Control rod (3)
650	15,7-16,3	650	16,0		15,6-16,0 10,0-14,6 0 - 9,3 0	590	0	200 300 400 490	6,8-8,1 4,7-6,9 1,6-3,9 0	-	-

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever np. 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics	36)	Starting for	Control
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /~1000 strokes 5		rev/min 6	red travel cm ³ /1000 strokes:// mm 7
1200	119,0 - 121,0	1200		2)		100 rting	max. RW solenoid 24 V)

Checking values in brackets

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed		Sliding sl	eeve travel
deflection	Control	Control rod travel	(1a)	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel	onding o	1
	rodtravel mm	mm rev/min	(2a)	of control lever	rev/mın	mm 4	of control levar	rev/min	mm ③	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.66	1225 1300 1400 1540	2,1-8	,8	-	-	-	ca.10	100 250 400 570	6,8-8,0 5,1-6,8 2,2-3,7		0,2-1,1 4,0-4,4 8,3
							За				

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tern rev/min	stop	Intermediate speed	high idle s	peed 5b cm ³ /1000 strokes	Starting Idle switchin		Torque- travel	Control rod travel
1	2	3	4	5	6	7	8	9
1200	119,0-121,0	1220			100 **	max. RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

RQV .. 328 R

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed		Sliding s	eeve travel
	rev/min Control rod travel	Control rod travel	(1a)	Degree of deflection of control	1	Control rod travel	Degree of deflection of control	l	Control rod travel		0
lever		rev/min	(2a)		rev/min	mm 4	lever	rev/min	mm ③	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.66	1225 1300 1400 1540	2,1-8		-	-	-	ca.10	100 250 400 570	6,8-8,0 5,1-6,8 2,2-3,7		0,2-1,1 4,0-4,4 8,3
							За				

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten		Rotational-speed (2b) Imitation intermediate speed	Fuel deliv	very characteristics 58 speed 50	Starting Idle switching	fuel delivery 6	Torque- travel	9
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm³/1000 strokes	rev/min	cm ^{\$} /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1200	119,0-121,0	1220		**	100 (sta	max. RW rting solenoi	d 24 \	()

Checking values in brackets

* 1 mm less control rod travel than col 2

estoil-ISO 41

Test Specifications Fuel Injection Pumps 2 and Governors

VDT-WPP 001/4 MB 12,8 d 2. Edition

Cy1. 8

PE 8 P 100 A 320 LS 810

750 PA248R (1)

RQ 1100 PA248R

supersedes company:

engine:

Daimler-Benz

OM 402

(1 - 148/163 PS) (2 - 200/220 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

3,4 + 0,1

mm (from BDC)

 $(^{+0},^{15}_{-0},^{05})$

Rotational speed rev/min	control rod travel mm cm³/100 strokes 2 3		Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,7 - 12,4	0,4	600 9	5,4 - 6,1	_
200	9	3,5 - 4,5		200 9	3,5 - 4,5	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQ 750 PA248 (1)

Checkin	ck (1)	Full-load s Setting po	int	Test spec	cifications (4)	Idle spec Setting p	oint		cifications 5			
rev/min	Control rod travel mm 2	rev/min 3	control red travel mm 4	Control rad travel rnm 5	rev/min	1	Control rod travel mm 8	rev/min 9	Control rod travel mm 10		Control rod travel mm 12	
ca.	trol lever 24° eve positio	n 36,1) mm	700 750 780 820 870	13 - 16 10,2 6,2-8,2 0,5-4,5	-	-	-	-	-	-	

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de governor c Test oil terr		Control rod stop	Fuel delive	ery characteristics	Starting f	
rev/min	cm ³ /-1000 strokes	rev/min 3	rev/min	cm ³ /-1000 strokes	rev/min	Control rod travel cm ³ /1000 strokes:/ mm
785-8	78,0 - 80,0 70: 1 mm RW wenig 00: 5,3 mm RW dispersion ma ease by ± 2,0 cm³	x. 6			100	ca.12

Checking values in brackets

4.76

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	g of slider	Full-load	•	_		idle spec	•			Torque		
PRG che rev/min 1	Control rod (1) travel mm 2	setting por rev/min 3	Control rod travel mm	Test spe- Control rod travel mm 5	rev/min	Setting previous	Control rod travel mm	rev/min	cifications (5) Control rod travel mm 10	rev/min	Control rod travel	(3)
ca	trol lever 24° eve positio		0 mm	1050 1100 1150 1240	14,0-16,0 10,1 4,5-7,3 0	-	_	-	-	_	-	
	control travel					and social					1 mm less cor	

on flyweight assembly dimension a =

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever np. 40°C (104°F)	Control rod stop (3a)		ery characteristics 3b	Starting for	d Control
rev/min	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
(2) 1080	85,0 - 87,0					
1110	-1120:1 mm RW les	S				
	1175:4,8 mm RW on max. 6 cm ³					

Checking values in brackets

Testoil-ISO 411

B. Governor Settings

	Checking of slider PRG check Control rod travel		Setting po	•	avel rod travel		idle speed regula Setting point Control rod travel		Test specifications Control rod travel		Control rod travel		3
rev/min	mm		rev/min	mm	mm	rev/min	rev/min	mm	rev/min	mm	rev/min	mm	l
1	2		3	4	5	6	7	8	9	10	11	12	
	٠												

Torque-control travel on flyweight assembly dimension a =

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever 2 mp 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting fi Idle spee	uel delivery d Control
rev/min	cm ³ /-1000 strokes	rev/min	rev/min 4	cm ³ /-1000 strokes	rev/min	rod travel cm ³ /1000 strokes / mm 7
						,

En Checking values in brackets

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 9,6 e 2. Edition

En

PE 6 P 110 A 320 LS 829

0 -45 -120-165-240-285°

6 - 3 - 5 - 2 - 4 - 1

RQ 300/1150 PA 387 DR

supersedes

3.78

company:

Daimler-Benz OM 401 A

engine:

110 kW (150 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(3.35-3.55)

mm (from BDC)

Cy1. 6

		(0,00 0,00)				
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strakes 3	Spring pre-tensioning (torque-control valve) mm
1150	13.6	14.6 - 14.8	0,4(0,8)			
300 600/500	+ 0,1 7,9-8,1 	1,6 - 2,2 C, col.4-5	0,3(0,7) 0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checkin		Full-load s	•		cifications 4	Idl e spec	_		cifications (5)	Torque o	control 3
rev/min	Control rod	rev/min 3	Control red travel mm 4	Control rad travel mm	rev/min 6		Control rod travel		Control rod travel mm	rev/min	Control fod travel mm 12
600	19,2-20,8	600	20,0	12,8 4,0	1195-1210 1260-1290		8,0	100 300	min.9,5 7,9-8,1	1150	+0,1 13,6
1150 1400		(Con leve ca.4	I.					460-	500= 2,0	600	13,7

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de governor c Test oil ten		Control rod stop	Fuel delive	ery characteristics	Starting fuel delivery Idle speed Control		
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	rod travel cm ³ /1000 strokes:/ mm 7	
LDA 1150	0,7 bar 146,0-148,0 (143,0-151,0)		LDA 600 LDA 500	114 0-116 0	persio Change	110,0-130,0 4,1-4,3 mmRW n max. 6 (9) -over point 0(80-240)	

Checking values in brackets

4.80

BOSCH

HAS

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

MB 9,6 e

-2-

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
829 with 387 DR	0,7	0,480 0,385 0	13,6 - 13,7 13,1 - 13,2 12,4 - 12,6 12,1 - 12,2
			•

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

416

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (IA) and Governors

WPP 001/4 MB 11,4d 2. Edition

PES 6 P 100 A 820 LS351 EP/RSV 350-1100 P 0/818R (1) (2).. LS351 350-750 P 1/819 R .. LS351

** Set idle-speed auxiliary spring at 1,5-2,0 mm control-rod

350-900 P 1/819 R

supersedes company engine

7.78 Daimler-Benz

OM 407

(1 - 177 kW - 241PS (2 - 136 kW - 185PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

(2,95-3,15)Port closing at prestroke

travel.

mm (from BDC)

Cy1. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery (1) cm ³ /100 strokes 3	Difference cm²/ 100 strokes 4	Control rod travel mm 2	Fuel delivery (2 - 3) cm\$100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1080	13,5	12,1 - 12,3	0,3(0,6)	14,0	12,3 - 12,5	n = 700
350	+ 0,1 8,5-8,7	1,2 - 1,8	0,3(0,5)	+0,1 8,5-8,7	1,2 - 1,8	

Adjust the fuel delivery from each outlet according to the values in [

B. Governor Settings

Testoil-ISO 411

(1)

Degree of deflection of control lever	ection travel travel ontrol mm mm rey/min		Interme	diate rate	d speed	Control- tever deflection in degrees 7	introl- inter introl- inter inter inter inter inter inter introl- introl			rque control Control rod travel mm 11
loose		0,3-1,0 4,7				ca.29	350 200 350	7,2 min.19 7,1-7,3		**
ca.52	1200-1	140=12,5 230= 5,8 0,3- 1,7					510-570 650			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp 40°C (104°F)	Rotational- speed limitat	3a Fu	nel delivery aracteristics	Starting t	uel delivery 5	da idle stop	
rev/min	cm ³ /1000 strokes 2	changed to) rev/min 3	rev/min 4	cm¥1000 strokes 5	rev/min	cm\$1000 strokes 7	rev/min 8	travel mm 9
(1) 1080	121,0-123,0 (119,0-125,0)	1130-1140*		dis	100 350 1215 pers ion	135,0-155,07,1-7,3mmRl 5,7-5,9 max.4(6)		./.

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

Degree of deflection of control lever	r fated speed Control rod travel mm	rev/min Control rod travel mm rev/min 3	Intermed	liate rated	speed	Control- lever deflection in degrees 7	-	rated speed Control rod travel mm	11 ~ 1	rque control Control rod trayel mm 11
1oose	800 x =	0,3-1,0 4,5				ca.23	350 200	7,3 min.19		**
ca.37	750-75 780-79	55=13,0 90= 6,0 ,3- 1,7					350	7,2-7,4 10=2,0 0 - 1		

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	II-load stop	6 Rotational- speed limitat.		el delivery aracteristics	Starting f	uel delivery 5	4a) Idie stop	
Test oil te rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm ³ /1000 strokes 5	rev/min	cm ³ /1000 strokes 7	rev/min 8	Control root travel mm 9
(2) 700	123,0-125,0 (121,0-127,0)	750-755*		di	100 350 785 persi	135,0-155,0 7,2-7,4mmR 5,9-6,1 on .max.4 (W 6) ^{mmRk}	

Checking values in brackets

Testoil-ISO 4113

* 1 mm less control rod travel than col. 2

B. Governor Settings

	(3)	
r	rated	speed	

	r rated speed Control rod travel mm 2		Intermed	diate rated	speed	Co: !- levi. deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm 9	3 To rev/min 10	rque control Control rod travel mm
loose	800	0,3-1,0				ca.23	350	7,3		
	X=	. 4,5						min. 19		
ca.40	935- 9	010 =13,0 045 = 6,0 0,3- 1,7					350 390-41 450	7,2-7,4 = 2,0 0 - 1		

C. Settings for Fuel Injection Pump with Fitted Governor

U	ill-load stop	6 Rotational- speed limitat.	39 Fu	el delivery aracteristics	Starting f	Starting fuel delivery 5 4a Idle stop			
Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes		Note: changed to) rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
(3) 850	125,0-127,0 (123,0-129,0) -14,0-14,1mmRW	905-910*		dis	1	135,0-155, 7,2-7,4mmR 5,9-6,1mmR max.4 (6	M	·	

Checking values in brackets En

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 SCA 11,0 t 2. Edition

En

8.79 supersedes PE 6 P 110 A 720 RS 3065 RSV 350-1100 P1/462R (1) Scania company D 11 (1)PE 6 P 110 A 720 RS 3066 RSV 350-1100 P1/462R engine **DS11** (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

3,30-3,40 (3,25-3,45)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery (1) cm ³ /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm ⁴ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,3-12,4	13,5-13,7	0,4(0,8)	13,2-13,3	16,1-16,3	2,5+0,1** (max.2,2-2,9)
350*** 600	5,8-6,0 	0,6- 1,0 C, col.4-5	0,2(0,4) 0,6(1,0)	6,4-6,6	0,8- 1,2	(max.2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in [

B. Governor Settings

(1) with 3065

Degree of deflection of control lever	r rated speed Control rod travel mm 2		Intermed	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	3 To	rque control Control rod travel mm
loose	800 x	0,3-1,0 4,0				ca.31	350 100 350	5,4 min.20 5,8-6,0		
ca.68	1210-12	150= 11,3 240= 4,0 0,3-1,7					540-60			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

40	ill-load stop	6 Rotational- speed limitat		el delivery paracteristics						
Test oil to rev/min	emp 40°C (104°F) cm ⁵ /1000 strokes 2	Note changed to) rev/min 3	rev/min	cm¥1000 strokes	rev/min 6	cm\$1000 strokes	rev/min 8	Control rod travel mm 9		
(1) 1100	135,0-137,0 (132,0-140,0)	1140-1150*	600	134,5-137,5 (131,5-140,5)	100 350 1200	190-240 8 - 12** dispersion max.4(7)				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

Degree of deflection of control lever	deflection of control mm mm rev/min			ediate rate	d speed	Control- lever deflection in degrees 7 Lower rated speed Control rod travel mm 9			Torque control Control rod travel rev/min mm 10 11		
loose	800 x	0,3-1,0 = 4,0				ca.27	350 100	6,0 min.20			
ca.62	1205-1	150=12,3 235= 4,0 = 0,3-1,7					350 520-58	6,4-6,6 0 = 2,0			

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop Test oil temp. 40°C (104°F)		Rotational- speed limitat.		el delivery Paracteristics	Starting f	uel delivery 5	(4a) idle stop Control roo	
rev/min 1	cm ³ /1000 strokes 2	changed to) rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
(2) 1100	161,0-163,0 (158,0-166,0)	1140-1150*	600	162,5 - 165,5 159,5 - 168,5)	100 150 1200	190-240 10 - 14** dispersion max.4(7)	ì	

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm	Intermed	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	rev/min	rque control Control rod travel mm
29									

C. Settings for Fuel Injection Pump with Fitted Governor

C	ill-load stop emp. 40°C (104°F)	Rotational- speed limitat.	39 FL	uel delivery naracteristics	Starting t	luel delivery 5	6	Control rod
rev/min 1	cm³/1000 strokes	changed to) rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7		travel mm 9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications
Fuel Injection Pumps ①
and Governors

WPP 001/4 MB 19,1 d 2. Edition

En

PE 12 P 110 A 320 LS 830 ..LS830,Z

RQ 750 PA374R RQ 900 PA310R (1) (2-3) supersedes 10.77 Da im1

Daimler-Benz OM 404 (A)

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 + 0,50 $0 - 45-60-105-120-165-180-225-240-285-300-345^{\circ}$ ($\overline{0}$,75) engine: (1 - 358 PS) (2 - 330 PS)

(3 - 368kW - 500PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Cy1.12

3,20-3,30
Port closing at prestroke (3,15-3,35) mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery (1) cm³/100 strokes	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery (2-3) cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,6	13,7 - 13,9	0,4(0,8)	13,2	14,1 - 14,3	n = 850 (2)
300	+ 0,1 8,0-8,2	1,1 - 1,7	0,4(0,7)	+0,1 14,1 8,0-8,2	15,8 - 16,0 1,1 - 1,7	n = 850 (3)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQ 750 (1)

deflection	rev/min Control	rigaei /	Intermedia Degree of deflection	te rated sp	eed Control rod travel	Lower rated Degree of deflection	speed	Control rod	Sliding	ileeve travel
of control lever	rod travel mm 2	mm rev/min (2 3	of control lever	rev/min 5	mm 4 6	of control lever 7	rev/min 8	mm 3 9	rev/min 10	mm 11 -
ca.28	12,6 6,0 0,1	750-755 780-790 850	-	-	-	- (3a)	-	-	750	3,8

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roe Test oil ten		fimitation intermediate speed	Fuel delin high idle s	very characteristics 5a	Starting Idle switchir		Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	um nave.
1	2	3	4	5	6	7	8	9
(1) 700	137,0-13,0 (138,0-146,0)	750~755*			100 785 dispe	5,9-6,1	9)	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed		Sliding sl	eeve travel
Degree of deflection of control lever	rev/min Control rodtravel mm	travel mm	3	Degree of deflection of control lever	rev/min	Control rod travel mm 4		rev/min	Control rod travel mm 3		mm
ca.34	12,2 6,0 0-1	905-910 940-950 1050		•	-	-	- 3a	•	-	900	5,6

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem	stop	Rotational-speed 2b limitation intermediate speed	Fuel deliv	very characteristics 5a speed 5b	Starting I Idle switchir		Torque- travel	Control roo
rev/min 1	cm ³ /1000 strokes	rev/min 4a	rev/min	cm ³ /1000 strokes 5	rev/min	cm3/1000 strokes	rev/min 8	travel mm
(2) 850	141,0-143,0 (138,0-146,0)	905-910*		dis _i	100 945 ersid	110,0-130,0 5,9-6,1 on max.6 (9)		

Checking values in brackets

B. Governor Settings

RQ 900 (3)

RQ 900 (2)

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed		Sliding s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	mm	ta) 2a)	Degree of deflection of control lever		Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm (3		mm
1	2	3		4	5	6	7	8	9	10	11
ca.34	13,1 5,9 1050	905-910 940-950 0 - 1								900	5,6
							3a)				

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roe		Rotational-speed (2b) Ilmitation Intermediate speed	Fuel deliv	very characteristics 5a speed 5b	Starting Idle switchir		Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	j	cm ⁵ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(3) 850	158,0-160,0 (155,0-163,0	905-910*)		dis	945 persio	5,8-6,0 on max.6(9)		

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 19,1f1 3. Edition

PE 12 P 100 A 320 LS 820 "Z"

RQ 900 PA 310 R

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 + 0,50

0 - 45 - 60 - 105 - 120 - 165 - 180 - 225 - 240 - 285 - 300 - 345 (0.75)

supersedes MB 19,1 f-8.79 Daimler-Benz

company:

OM 404 engine:

242 kW (329 PS) "Z"

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

3,20-3,30 Port closing at prestroke

mm (from BDC)

Cv1.12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,3-11,4	8,9 - 9,1	0,3(0,6)	12,3-12,4	10,0-10,2	n 850
250	7,9-8,1	1,2 - 1,8	0,4(0,5)	8,6-8,8	1,2- 1,8	250

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

without Z

	rev/min Control	Control rod (a	Intermediate Degree of deffection	rated sp	control rod travel	Lower rated Degree of deflection	speed	Control rod	Sliding s	leeve travel
	rod travel mm 2	mm rev/min (28 3	of control lever	rev/min 5	mm 4 6	of control lever 7	rev/min 8	mm 3	rev/min 10	mm 11
ca.27	10,3 4,9 1000	940-950				3 8				

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter	d stop np. 40°C (104°F) 2	intermediate speed	Fuel deliv	(3)	Starting Idle switchir	\mathbf{O}	Torque- travel	Control rod
rev/min	crh³/1000 strokes	rev/min 42	rev/min	cm ³ /1000 strokes		cm³/1000 strokes	rev/min	mm
 	2	3	-	5	6	7	8	9
880	89,0-91,0 (87,0-93,0)	905-910*		Ċ	100 100 945 isper	16,5-17,0 (80) 4,8-5,0mmRl sion max.6(6	, ,	

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

Upper rated s	peed			intermediate	rated spe	ed	Lower rated	speed		Sliding sl	eeve travel
deflection	Control	Control rod travel	(1a)	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		1
of control lever	rodtravel mm	mm rev/min	(2a)	of control lever	rev/min	mm 4	of control lever	rev/min	mm 3	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
	11,3 5,0 1100	905-910 945-955 ŭ -				·				900	5,5
							39				

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten	Jacob	Rotational-speed (2 irmitation intermediate speed	Fuel deli high idle	very characteristics (5a) speed (5b)	Starting to the switching of the switching of the start of the switching o		Torque- travel	Control roo
rev/min	cm ⁴ 1000 strokes	rev/min 4	rev/min	cm ³ /1000 strokes	rev/min	cm3/1000 strakes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
850	100,0-102,0 (98,0-104,0				100	90,0-110,0		7
				d		4,9-5,1mmRW sion max.4(6)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed			Sliding sleeve trav		vel
deflection		Control rod travel	(ta)	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control ro travel	od -	Cilding of		1
	mm	rev/min	(2a)		rev/min	mm (lever	rev/min	mm	3	rev/min	mm	
1	2	3		4	5	6	7	8	9		10	11	
							(3a)						

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

T	ull-load de control-rod est oil tem	stop p 40°C (104°F) 2	Rotational-speed (2b) Ilimitation Intermediate speed rev/min	Fuel delivingh idle s	rery characteristics 5a speed 5b cm³/1000 strokes		fuel delivery 6 ng point cm ⁶ /1000 strokes	Torque- travel	Control od travel
1	54711()	2	3	4	5	6	7	8	9
T									
	;					1			
	ļ								
						ļ	•		
1_									

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 12,8 h 1. Edition

PE 8 P 100 A 320 LS810 PE 10P 100 A 320 LS811

RO 1150 PA407R RO 1150 PA407R (1)(2)

supersedes company:

Daimler-Benz OM 402/OM 403

8 - 7 - 2 - 6 - 3 - 5 - 4 - 1

0 -45 -90-135-180-225-270-315° Cyl.8 10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2

0 -45 -72-117-144-189-216-261-288-333°

engine: 175kW -238PS-12,8) (2 - 217kW - 295PS - 16.0)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

3,40-3,50

mm (from BDC)

		[3.35-3.55]				
Rotational speed rev/min	Control rad travel mm 2	Fuel deliver (1) cm³/100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,2	10,6-10,8	0,3(0,6)	10,9	10,4-10,6	
300	+0,1 7,4-7,6	1,7- 2,3	0,3(0,5)	+0,1 7,4-7,6	1,7 -2,3	

Adjust the fuel delivery from each outlet according to the values in F

B. Governor Settings

407 with 810 (1)

Upper rated	speed		 Intermediate	rated sp	eed	Lower rated	speed		Sliding sleeve travel		
Degree of deflection of control lever	rev/min Control rod travel mm	rev/min	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	mm	
	2	3	4	5	6	7	8	9	10	11	
	10,2 4,0 1300	1155-11 1105-12 0 - 1									
}						3a					

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed			Starting Idle switchir		Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min cm³/1000 strokes		rev/min	travel mm
1	2	3	4	5	6	7	8	9
1100	106,0-108,0 (104,0-110,0)	1155-1160*			100	110,0-130,0		
				dis	1200 persi	3,9 - 4,1mm on max.4(6)	RW	
L					,			./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

407 R with 811 (2)

Upper rated :	speed		Intermediate	rated spe	eed	Lower rated	speed		Slidina sl	eeve travel
Degree of deflection of control lever		Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	1) mm
	9,9 3,8 1300	1155-11 1195-12 0 - 1				(3a)				

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem		Rotational-speed (2b) timitation intermediate speed			Starting fuel delivery Idle switching point		Torque- travel	Control rod
rev/min	cm [‡] 1000 strokes	rev/min 4a	rev/min	cm ³ /1000 strokes 5	rev/min 6	cm3/1000 strokes	rev/min 8	travel mm 9
1100	104,0-106,0 (102,0-108,0			dis	100 1200 persio	110,0-130,0 3,7-3,9 mmR on max.4(6)	N	

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

Upper rated	speed			Intermediate	rated spe	ed	Lower rated	speed		Sliding sl	eeve travel
Degree of deflection	rev/min (Control	Control rod	(1a)	Degree of deflection	#	travel	Degree of deflection	ı	Control rod travel		0
of control lever	rod travel	mm rev/min	(2a)	of control lever	rev/min		of control lever	rev/min	mm ③	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
							(3a)				

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Contr		p 40°C (104°F) (2)	intermediate speed (4a)		(switchir	ng point	travei	Control rod travel
rev/n	าเก	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ⁶ /1000 strokes	rev/min	mm
1		2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps 1 and Governors

MAN 20,9 b WPP 001/4

2. Edition

supersedes

company:

estoil-ISO 4113

PE 12 P 110 A 520/4 LS 824

ROV 250-1150 PA 353 R

11.77 MAN

PE 12 P 110 A 520/4 LS 835

RQ 750 PA 404 R

engine:

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 + 0,50 0 - 45 - 60 - 105 - 120 - 165 - 180 - 225 - 240 - 285 - 300 - 345° (+ 0,75)

D 2542 MTE

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Cy1.12

(2.95-3.15)

mm (from BDC)

Rotational speed rev/min	travel "824"		Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery "835" cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	13,4	12,9 - 13,1	0,4 (0,8)	12,3	16, 1 - 16,3	n = 700
	(+0,1)			(+0,1)		
250	8,9-9,1	- 1,4 - 2,2	0,4 (0,7		2,1-2,7	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQV .. 353

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed	1	Sliding sleeve travel		
	rev/min Controi	Control rod (a)	Degrae of deflection		Control rod travel	Degree of deflection		Control rod travel		①	
of control lever	rod travel mm	mm rev/min 2a	of control lever	rev/min	mm 4	of control lever	rev/min	mm ③	1	mm	
1	2	3	4	5	6	. 7	8	9	10	11	
ca. 68	1150 1480		-	-	-	ca. 11	100 250 470-	min.7,5 5,9-6,1 530 =2,0	200 800 1170	0,2-1,3 5,4-5,8 8,3	
ca. 66		1190-1200 1320-1350					630	0	•		
						3a		·			

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten		Rotational-speed 2D limitation intermediate speed	Fuel delivingh idle s	rery characteristics 5a peed 5b	Starting Idle switchir	O	Torque- travel	Control rod
fav/min	cm³/1000 strokes	rev/min 4a	rev/min	cm ³ /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1150	129,0-131,0 (126,0-134,0)	9			100	95, 0- 125, 0		
					100-	-170 (80-190)		./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

peed		Intermediate	rated spe	eed	Lower rated	speed		Stidings	Sliding sleeve travel	
Control	travel mm	deflection of control	rev/min		Degree of deflection of control lever	rev/min	Control rod travel mm (3		mm 1	
2	3	4	5	6	7	88	9	10	11	
11,3	750-755							750	4,5	
5,4	755-785					ə	1			
900	0 - 1									
					(3a)					
	rev/min Control rodtravel mm 2 11,3	rev/min Control rod travel rodtravel mm rev/min 2a 3 11,3 750-755 5,4 755-785	rev/min Control rod (1a) Degree of deflection of control rev/min (2a) 11,3 750-755 5,4 755-785	rev/min Control rod travel rod travel mm rev/min 2a Degree of deflection of control rev/min 2a 11,3 750-755 5,4 755-785	rev/min Control rod (1a) Degree of deflection of control rev/min (2a) Peyree of deflection of control rev/min (2a) (2a) (2b) State of deflection of control rev/min (4) (5) (6) (6) (755 - 785) (755 - 785)	rev/min Control rod travel mm rev/min 2 3 Degree of deflection of control lever rev/min 5 Control rod travel mm rev/min 2 3 750-755 5,4 755-785 900 0 - 1	rev/min Control rod travel rod travel mm rev/min 2 3 Degree of deflection of control lever rev/min 5 Control rod travel mm rev/min 2 3 750-755 5,4 755-785 900 0 - 1	rev/min Control rod travel rod travel rev/min 2a 3	rev/min Control rod (a) travel rod travel mm rev/min 2a) 2a) 2a	

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil terr	stop	Rotational-speed (2b) fimitation intermediate speed	Fuel deliv	very characteristics 5a speed 5b	Starting idle switchin		у 6	Torque- travel	control 5
rev/min	cm \$1000 strokes	rev/min 4a)	rev/min	cm ³ /1000 strokes 5	rev/min	cm3/1000 7 MM		rev/min 8	travel mm
700	161, 0-163, 0 (158, 0-166, 0)			C	100 780 isper		- 21 - 5,5 nax.6(9		

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

Upper rated s	peed			Intermediate	rated spe	Speed Lower rated speed				Sliding sl	eeve travel
Degree of deflection		Control rod travel	(1a)	Degree of deflection	l	Control rod travel	Degree of deflection	1	Control rod travel		1
of control lever	rod travel	rev/min	(2a)	of control lever	rev/min	mm 4	of control lever	rev/min	mm 3	rev/min	mm
1	2	3		4	5	6	7	8_	9	10	11
							За				,

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

	d stop np 40°C (104°F) 2	intermediate speed (4a)	IIIgii Cic C	rery characteristics 5a	switchir	g point	traver	Control rod travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ⁹ /1000 strokes	rev/min	mm
1_	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps (2) and Governors

VDT-WPP 001/4 BOS 12,3i

1. Edition

PE 6 P 120 A 721 RS 217

RQ 250/1100 PA 311 DR (V1258o D) supersedes

company:

Büssing

engine:

S 12

Testing with T nozzles and fuel lines 8 x 2 x 1000!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2.8 + 0.1

mm (from BDC) + 0,15-0,05

Rotational speed	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	19,6 - 20,4	0,8			
600	6 15	9,6 - 11,0 21,3 - 23,2				
200	9	5,0 - 6,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking PRG che rev/min 1	Control rod	Full-load s Setting po rev/min 3	•	_	cifications 4	Idle spee Setting p rev/min 7	Control rod travel		cifications 5 Control rod travel mm	Torque of rev/min	Control rod (3)
550	15,6-16,4	550	16,0	1120 1150 1180 1240	13,8-14,2 6,0-12,0 0 - 8,1 0	510	0	100 200 300 410	6,6-8,1 5,1-7,2 2,3-4,5 0		15,8-16,0 14,4-14,7

Torque-control travel

0,65

Speed regulation: At

1 mm less control

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics (3b)	Starting fuel delivery Idle speed Control		
rev/min	cm³/~1000 strokes	rev/min 3	rev/min	cm ³ /-1000 strokes	rev/min 6	rod travel cm ³ /1000 strokes:/ mm 7	
LDA 1100	0,7 bar 220,0-224,0 218,0-226,0 216,0-228,0		LDA 800 LDA 500	0,7 bar 215,0-221,0 213,0-223,0 0 bar 113,0-119,0 111,0-121,0	100	16 mm RW	
						./.	

Checking values in brackets

10.75

Testoil-ISO 4113

-2-

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

700 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	diminution Control rod travel- difference mm (1) .
217 with 311 DR	0,56		- 0,2 - 0,3 mm
		0,26	- 2,8 - 3,2 mm
			,

Notes:

(1) when n =

1100

rev/min and gauge pressure =

0,7

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

J22

2

Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4 BOS 12,3 c 1 .1. Edition

En

PE 6 P 120 A 821 LS 139

RQ 250/1100 PA 192 DR ROV300-1100 PA 258 DR supersedes company:

D:: - -

engine:

Büssing U 12 DA 63

Testing with T nozzles and fuel lines 8 x 2 x 1000!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,8 + 0,1 mm (from BDC)

Cy1. 6

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1000	12	20,7 - 21,1	0,4			
600	9 15	10,2 - 11,7 23,4 - 25,3				
. 200	9	6,0 - 7,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Testoil-ISO 4113

RQ.. 192 DR

I		Checking of slider Full-load speed PRG check 1 Setting point				Idle speed regulation Setting point Test specifications (5)			Torque control			
		Control rod	rev/min	Control rod travel mm	Control red travel mm	rev/min	rev/min	Control rod travel		Control rod travel mm	rev/min	Control rod travel mm
المراجات والمستدرية	550	15,7-16,	3 550	16,0	1120 1160 1200 1250	14,4-14,8 6,8-12,5 0 - 7,2 0			160 220 300 390	6,6-8,1 5,2-7,3 2,4-4,7 0	900	15,8-16,0 15,3-15,6 14,4-14,9

Torque-control travel on flyweight assembly dimension a =

0,4 _{mm}

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop	Fuel delive	ery characteristics (3b)	Starting for	
rev/min	cm ³ /-1000 strokes 2	rev/min 3	rev/min	cm ³ /-1000 strokes	rev/min 6	Control rod travel cm ³ /1000 strokes:/ mm
LDA 1100 LDA 1100	0,7 bar 238,0-240,0 0 bar 201,0-207,0		LDA 700 500	0,7 bar 200,0-204,0 198,0-204,0		1 mm control- rod travel more than full load
(inc	ease by ± 2,0 cm	!)				./.

Checking values in brackets

BOSCH

	rev/min Control rod travel mm	Control rod ta travel mm rev/min 2a	Intermediate Døgree of deflection of control lever	rev/min	Control rod travel	Lower rated Degree of deflection of control lever 7	speed rev/min 8	Control rod travel mm 3	Sliding sl rev/min 10	eeve travel mm 11
ca.50	1140 1180 1220 1280	14,4-17,4 8,0-13,0 0 - 8,4 0	-	**	-	ca.13	100 200 300 410	7,6-10,3 5,7- 8,6 2,5- 5,4 0	500 900 1140 1100	

Torque control travel a = 0.4

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil tem	stop np 40°C (104°F) 2	Rotational-speed 2b limitation intermediate speed 4a	Fuel deliv character high idle s	ristics 56	idle switchin		Torque- travel	Control rod travel
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes		cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	/	8	9
LDA	0,7 bar		LDA	0,7 bar				
1100	238,0-240,0	1140-1150*	700	200,0-204,0		1 mm CRT mor	_	
LDA	236,0-242,0 0 bar		500	198,0-206,0 198,0-204,0		than full lo	au	
1100	201,0-207,0		300	196,0-206,0		nge-over poir	t	
1100	199,0-209,0			150,0-200,0		-130 min ⁻¹		
	,0 200,0							

Checking values in brackets

* 1 mm less control rod travel than co; 2

D. Adjustment Test for Manifold Pressure Compensator

Pump/governor	Setting	Measurement	Control rod travel-
,	Gauge pressure = b	ar Gauge pressure = bar	1
139 with 192D (2) Increasing press	0,26 - 0,29 ure		Difference (4) ca. 2,3 mm
139 with 258D (1) Decreasing pressu	0,46 - 0,49 ure	0,20 - 0,24	Reduction (3) - 0.1 m Reduction (3) - 2.1 m

500

0,7

Testoil-ISO 4113

WPP 001/4 MB 16,0 f 3. Edition

PE 10 P 100 A 320 LS 827

RQ 300/1150 PA187R RQ 300/1150 PA187R (1)(2) supersedes 8.77

company:

Daimler-Benz

engine:

OM 403 (352 PS - 1) (304 PS - 2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2 + 0,50 0 -45 -72-117-144-189-216-261-288-333° (+0,75)

A. Fuel Injection Pump Settings 3,20-3,30 Port closing at prestroke (3,15-3,35)

3,40-3,50 mm (from BDC)(3.35-3.55) = 811

Cy1. 10

		(3,10-3,33)		(J, J) - J, J;	<u> </u>	
Rotational speed rev/min	Control rod travel • mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,3	10,9 - 11,1	0,3(0,6)	10,2	9,4 - 9,6	
300 600	(+0,1) 8,4-8,6 	1,3 - 1,9 C, col.4-5	0,3(0,5) 0,4(0,7)	(+0,1) 7,4-7,6	1,7 - 2,3	

Adjust the fuel delivery from each outlet according to the values in ...

B. Governor Settings

187R with 827 (1)

Checking PRG che rev/min 1	Control rod			Test spec Control red travel	rev/min	Idle spee Setting p rev/min 7	Control rod travel	Test spe	cifications 5 Control rod travel mm	Torque o rev/min 11	Control rod (3)
600	13,8-14,6	600	14,2		1195-1205 1240-1280	300	8,5	100 300	min.10 8,4-8,6	-	-
1170 1400								430- 600	470=2,0 0 - 1		

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting for Idle spee	uel delivery d l Control
rev/min	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	rod travel cm ³ /1000 strokes:/ mm 7
1150	109,0-111,0 (107,0-113,0)	500	600	95,0 - 100,0	100	110,0-130,0
	(107,0-113,0)			(93,0 - 102,0)	300	14,0 -20,0
						./.

Checking values in brackets

1.78

BOSCH

2

Checking	g of slider	Full-load	speed re	gulation		idle spea				Torque o	control	
PRG che	ck Control rod	Setting po	Control	Test spe	cifications (4)	Setting p	coetral	Test spe	cifications 5		Control rod	3
rev/min	travel	rev/min	rod travel	rod travel	rev/min	rev/min	rod travel	rev/min	travel mm	rev/mเก	travel -	
650	13,8-14,6	650	14,2	9,2	1195-1210		8 7,5 ·	100	min.9,0	11	12	
			-	4,0	1235-1265			300	7,4-7,6			
1170 1400								405-4 600	45=2,0 0 - 1			

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation At

1 mm tess control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

gover	iuli-load delivery on povernor control lever est oil temp 40°C (104°F)		Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting f	uel delivery d Control
rev/m	เก	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm .,
11	50	94,0 - 96,0 (92,0 - 98,0)	500	600	76,0 - 81,0 (74,0 - 83,0)	100 300	110,0 - 130,0 18,0 - 24,0

Checking values in brackets

estoil-ISO 4113

B. Governor Settings

rev/min r	k Control rod Iravel	Full-load s Setting po rev/min 3	•	Test spec	rev/min	Idle spec Setting p rev/min 7	_	cifications 5 Control rod travel mm	Control rod travel mm	3
			٠							

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever op 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics		Starting for	d Control
rev/min	cm ³ /-1000 strokes 2	rev/min 3	rev/min	cm³/-1000 strokes		rev/min	cm ³ /1000 strokes / mm
					•		

En Checking values in brackets

Fuel Injection Pumps 2 and Governors

WPP 001/4 MB 11.0 f 1. Edition

PE 6 P 120 A 320 LS 3815

RQ 300/1150 PA 546

supersedes

company:

Daimler-Benz

engine:

OM 421 A

184,0 kW (250PS)

6 - 3 - 5 - 2 - 4 - 1

 $0 - 45 - 120 - 165 - 240 - 285 + 0,5^{\circ} (+ 0,75^{\circ})$

Values only applx to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 6 x 1,5 x 1000 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Cy1. 6

Rotational speed rev/min 1	Centrol rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,5+0,	15.2 - 15.6	0,5(0,9)			
300	4,4-4,	6 0,1 - 0,7	0,8(1,2)			
				<u> </u>		
•						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Testoil-/SO 4113

Checking PRG che rev/min 1	Control rod	Full-load s Setting po rev/min 3	•	-	cifications 4	Idle spec Setting p rev/min 7	_	Test spe	cifications 5 Control rod travel mm	Torque o	Control rod (3) travel mm
600	19,2-20,8	600	20,0	9,5 4,0	1190-1205 1225-1260		4,5	100 300 340-	mind.6,0 4,4-4,6 380 =2,0	600	10,5-10,6 11,0-11,1 10,6-10,7

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At 1190-1205 min-1

1 mm less control

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever ap. 40°C (104°F)	Control rod stop [3a] Fuel delivery characteristi		ery characteristics	Starting f	uel delivery d Control
rev/min	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /~1000 strokes 5	rev/min 6	rod travel cm ³ /1000 strokes:/ mm 7
LDA= 1150		-	LDA= 900 600	0,7 bar 160,0-166,0 (157,0-169,0) 158,0-164,0 (155,0-167,0)	100	130,0-i50,0
			LDA= 500	0 bar 132,0-136,0 (129,0-139,0)		

Checking values in brackets

3.81

BOSCH

D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n =

rev/min decreasing pressure - in bar gauge pressure

MB 11,0 f

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	diminution Control rod travel- difference mm (1)
LS 3815 +PA 546	0,7 bar	0,47 0,4 0	11,0 - 11,1 10,8 - 10,9 10,3 - 10,4 10,1 - 10,3

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

K12

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps 2 and Governors

WPP 001/4

MB 12,8 a

3. Edition

PE 8 P 100/520/5 LS802 PE 8 P 100 A 320 LS807 RQ 300/1275 PA100DR PA100DR supersedes 5.74

PE 8 P 100 A 320 LS807

RQ 300/1250 PA189DR +0,5

Daimler-Benz company: OM 402

8 - 7 - 2 - 6 - 3 - 5 - 4 - 1

engine:

0 -45 -90-135-180-225-270-315°

188 kW (256 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2.75 - 2.95)

mm (from BDC)

Cy1. 8

		2970 23507				
Rotational speed rey/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	8,1 - 8,8	0,4			
600 600 600 . 200	9 12 15 9	2,7 - 3,7 6,3 - 7,5 10,9 -12,4 0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

100 DR

Checking PRG che rev/min 1	Control rod travel	1	•	-	cifications (4)	 _	Test spe	cifications 5 Control rod travel mm 10	Torque o	Control rod travel
600	15,7-16,3	600	16,0	1270 1300 1340 1410	15,6-16,0 11,0-15,0 0 -10,0 0	0	150 250 350 470	6,8-8,1 5,1-7,2 2,3-5,7 0	-	-

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At 1290-1310

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics	Starting to	ruel delivery ed 6
rev/min	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	red travel cm ³ /1000 strokes:/ mm 7
1250	95,0 -97,0 93,0 -99,0	600	600	75,0 - 80,0 73,0 - 82,0	100	140 - 160

Checking values in brackets

1..78

KA3

	12,00	-
ue c	control	
	Control rod	
חוח	travel mm	
	12	

	g of slider	Full-load s	•	_		idle spec	•			Torque	
PRG che	Control rod travel	Setting por rev/min 3	Central	Test spec Control rod travel mm 5	rev/min	Setting prev/min	Control rod travel	rev/min	cifications (5) Control rod travel mm 10	rev/min	Control rod travel mm
600	15,7-16,3	600	16,0	1270 1300 1330 1380	0 - 9		0	200 300 400 450	6,9-8,1 4,2-6,5 0 -2,3 0	•	-

Torque-control travel

Speed regulation At 1290-1310 mm⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np 40°C (104°F)	Control rod stop 3a	Fuel deliv	(24)	Starting f	uel delivery d Control	
rev/min	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm : 7	
1250	95,0 - 97,0 93,0 - 99,0	600	600	75,0 - 80,0 73,0 - 82,0	100	140 - 160	

Checking values in brackets

estoil-ISO 4113

B. Governor Settings

PRG che	Control rod travel	Setting po	•	_	rev/min	_ ′	Idle spee Setting p	Control rod travel mm			rev/min	Control rod (3) travel
1	2	3	4	5	6		7	8	9	10	11	12
							1					

Torque-control travel on flyweight assembly dimension a =

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np 40°C (104°F)	Control rod stop	Fuel delive	ery characteristics	71 \	Starting for	Control
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm ³ /-1000 strokes		rev/min	rod travel cm ² /1000 strokes / mm
					-		

En Checking values in brackets

estoil-ISO 411

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 BOS 12,3 c 2

2. Edition

PE 6 P 120 A 821 LS 139

RQ 300/1050 PA 519

1 - 5 - 3 - 6 - 2 - 4 je 60°

supersedes 3.80

company: Bussing

D 3256 BTXUE 213 kW (290PS)

Testing with T nozzles and fuel lines 8 x 2 x 1000!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

80-2.90 mm (from BDC)

Cy1. 6

Rotational speed rev/min	Control rod travel • mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,4-12	21.6 - 22.0	0,5(0,8)			
300	6,4-6,6	1,7 - 2,3	0,4(0,7)			
600/500/1050		C, Sp. 4-5	0,6(1,0)			
•						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checkin PRG che rev/min 1	Control rod	Full-load s Setting po rev/min 3	•	Test spec	rev/min	Idle spec Setting p rev/min 7	Control rod travel	Test spe	cifications 5 Control rod		Control rod travel mm
600	15,6-16,4	600	16.0	11,4	1095-1110	300	6,5	100	min.8,0	1050	12,4-12,5
1350	0 - 1,0			4,0	1150-1180			300 380=	6,4-6,6 420=2,0		12,6-12,8 12,9-13,0
			-					0		600	13,1-13,2

Torque-control travel on flyweight assembly dimension a =

nm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop	Fuel delive	ery characteristics 3b	Starting for speet	d Control
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	red travel cm ³ /1000 strokes:/ mm 7
LDA 1050	0,9 bar 216,0-220,0 (213,0-223,0)		LDA 600 LDA 500	0,9 bar 173,0-178,0 (170,0-181,0) 0 bar 113,0-117,0 (110,0-120,0)	100	180,0-200,0

Checking values in brackets

8.80

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
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D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

BOS 12.3 c 2

Pump/governor	Setting		Measurement	diminution Control rod travel- difference			
	Gauge pressure =	bar	Gauge pressure = bar	mm (1) .			
139 with 519	0,9 bar			13,1 - 13,2			
			0,305	12,4 - 12,5			
			0,225	11,0 - 11,2			
			0	10,6 - 10,7			

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

K16

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (2) and Governors

WPP 001/4 4. Edition

PE 6 P 110/321 RS 157

..A..

RQ 250/1100 PA113R

supersedes

company:

Steyr

engine:

(vorm. Ustr. Saurer)

5 FA

8.73

184kW (250 PS)

S nozzles and fuel lines $6 \times 1.5 \times 600!$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

estoil-ISO 4113

2,0 + 0,1

Rotational speed rev/min	Control rod travel • mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	17,5 - 18,1	0,6			
600	6 12	2,2 - 3,2 16,1 - 17,3				
200	6	0,4 - 1,4				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 1	Checking of slider PRG check Full-load speed re					Idle speed regulation Setting point Test specifications (5)				Torque control		
	rev/min	Control rod travel mm		Control rod travel mm 4	Control red travel rmm	rav/min	rev/min	Control rod travel rrinn B	rev/min	Control rod travel mm	rev/min	travei
	550	15,7-16,3	550	16,0		15,7-16,0 11,5-14,8 6,0-11,6 0 - 7,3	520	0	100 200 300 420	6,7-8,1 5,2-7,3 2,5-4,8 0	•	•

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	3 a	Fuel delivery characteristics 3b			Starting fuel delivery Idle speed		
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3		rev/min 4	cm ³ /-1000 strok e s 5		rev/min 6	cm ³ /1000 strokes:/ mm	
LDA 1080	0,7 bar 126,0-128,0			LDA 1080	0 bar 104,0-106,0		100	170,0	

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Gauge pressure = bar	Measurement Gauge pressure = bar	diminution Control rod travel- difference mm (1) .
0,17	0,37	ca. 1,0 mm
		•
		0,17

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,1 L 7

En

Testoil-ISO 4113

PES 6 P 110 A 720 LS 360 Z RO 30

RO 300/1100 PA 335

supersedes

compan MAN

engine: D 2566 MLUM/US

227 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,95-5,15

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,4	16, 1 - 16,3				
300	7,3-7,5	1,7 - 2,3				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checkin PRG che		1	Full-load s Setting po	int	Test specifications (4) Setti			_		cifications (5)		
rev/min	Control rod travel mm 2		rev/min 3	Control rod travel mm	Control rod travel rnm 5	rev/min 6	rev/min 7	Control red travel mm	rev/min 9	Control rod travel mm	rev/min	Control rod travel mm
1350	0 - 1	,0			ŀ	1145-1160 1200-1230		7,4	100 300	min. 8,9 7,3-7,5	1000 850	12,4-12,5 12,5-12,8 12,9-13,1 13,3-13,4

Torque-control travel on flyweight assembly dimension a =

m

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d governor of Test oil ten	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics 3b	1.0.0 00000		
rev/min	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	Control rod travel cm ³ /1000 strokes:/ mm	
LDA 1100	0,9 bar 161,0-163,0	1145 - 1160*	LDA 750 LDA 600 LDA 500	0,9 bar 174,0 - 178,0 0,3 bar 146,0 - 149,0 0 bar 120,0 - 122,0	100 100-2	215,0 - 235,0 20 (80-240)	

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement		Control rod travel
	Gauge pressure = bar	Gauge pressure =	bar	mm (1)
LS 360Z				
RQ PA 335	0,9			13,3 - 13,4
		0,42		12,7 - 12,8
		0,25		11,4 - 11,7
		0		10,9 - 11,0

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

2

Testoil-ISO 41

Test Specifications Fuel Injection Pumps 2 and Governors

40

VDT-WPP 001/4 DAF 11,6 h 3. Edition

En

PE 6 P 100 A 330 RS 304

RQ 225/1100 PA 284/1 DR RQ 225/1000 PA 291/1 DR ./. supersedes 10.75

company: D A F
engine: DKL 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 $(^{+}_{-}0,15)$

Port closing at prestroke

mm (from BDC)

١		Control rod travel • mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Spring pre-tensioning (torque-control valve) mm 6
	1000	12	12,4 - 12,9	0,5		
	600	9 12 15	5,2 - 6,2 11,4 - 12,8 17,3 - 18,5			
	•	9	3,4 - 4,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQ..284 / 1 DR

PR	RG che	ck Control rod travel	Full-load s Setting po rev/min 3	•	-		Idle spee Setting p rev/min 7	Control rod travel		cifications 5 Control rod travel mm	Torque of rev/min	Control rod (3)
5	500	15,6-16,4	500	16,0	1140 1170 1190 1240	14,3-14,6 5,0-12,5 0 - 8,5 0 - 1	460	0	150 250 320 360	7,2-8,1 3,9-6,0 0 -2,6 0	900	15,6-16,0 15,2-15,5 14,6-14,8

Torque-control travel on flyweight assembly dimension a =

0,45

1150-1165 Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics 3b	Starting fuel delivery Idle speed Control		
rev/min	cm³/-1000 strokes	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	rod travel cm ³ /1000 strokes:// mm 7	
1050	105,5-107,5 (102,5-110,5)	600	600	113,0-117,0 (110,0-117,0)			
						./.	

Checking values in brackets

2.77

K21

15,7-16,3

Checking of slider

Control rod

travel

PRG check

rev/min mm

500

200

300

					RQ.	291/	1DR	- 1	DAF 11,6	h	-2-(2)
- '	gulation Test spec Control rod travel mm	rev/min	4	Idle spee Setting p rev/min 7	-		cifications 5 Control rod travel mm	rev/min	Control rod	3	
)		14,8-1		430	0	100	6,6-8,1	780	15,8-16	5,0	

4,1-6,3

0 -1,8

880

Torque-control travel on flyweight assembly dimension a =

0,25 _{mm}

Full-load speed regulation

rod travel

16,0

mm

1050

1080

1130

9,0-14,0

0 - 1

8.8 - 0

Setting point

rev/min

500

Speed regulation A1050-1055

1 mm less control rod travel

14,9-15,2

C. Settings for Fuel Injection Pump with Fitted Governor

i	Full-load de governor co Tust oil tem	/0\	Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting fuel delivery Idle speed			
	rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes # mm		
	1000	112,0-114,0 (109,0-117,0)	600	600	118,0-122,0 (115,0-125,0)		•		

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking PRG che	g of slider ck	1	Full-load s			cifications 4	Idle spec	point		cifications (5)	Torque control	
rev/min	Control rod travel mm	O	rev/min	control rod travel mm	Control rod travel mm 5	rev/min	rev/min	Control rod travet mm 8	rev/min	Control rod travel mm	rev/min	Control rod travel mm

Torque-control travel on flyweight assembly dimension a

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

governor	telivery on control lever mp 40°C (104 F)	Control rod stop 3a	Fuel delivery characteristics			Starting fuel delivery Idle speed		
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm ³ /-1000 strokes		rev/min	rod travel cm ² /1000 strokes / mm	
]							·	

Checking values in brackets

VDT-WPP 001/4 MB 16,0 d 3. Edition

750 PA 248 R (1) PE 10 P 100 A 320 LS 811 900 PA 248 R (2) RO 1100 PA 248 R (3) 10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 (+0.5) 0 -45-72-117-144-189-216-261-288-333-360°

supersedes 6.75 company:

Daimler-Benz OM 403

(1 - 180/198 PS) (2 - 213(234 PS))(3 - 250/275 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

3.4 + 0.1

mm (from BDC)

Cyl. 10

engine:

Rotational speed rev/min	Control rod travel with governors-1100 cm³/100 strokes 2		travel		Fuel delivery ernors = 900+750 cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,7 - 12,4	0,4	600=9	5,4 - 6,1	
200	9	3,5 - 4,5		200=9	3,5 - 4,5	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQ 750..(1)

Checking of slider PRG check Control rod travel rev/min 1 2	Full-load speed of Setting point Control red trave rev/min 3	Test specifications (4)	Idle speed regul Setting point Control rev/min 7	Test specifications Control rod	Control rod travel mm
Control lever ca.24° Sleeve position	36,0 mm	700 13 - 16 750 10,2 780 6,2-8,2 820 0,5-4,5 870 0			-

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of governor of Test oil ter	lelivery on control lever np. 40°C (104°F)	Control rod stop 3a	entrol rod stop (3a) Fuel delivery characteristics			Starting fuel delivery Idle speed		
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5		rev/min 6	red travel cm ³ /1000 strokes / mm 7	
(1) 730	80,0-82,0 (78,0-84,0)					100	ca.12	
760- 785-	770= 1mm RW less 800= 5,4mm RW, d		<u> </u> 					

Checking values in brackets

Speed regulation At

Torque-control travel on flyweight assembly dimension a =

m

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load di governor c Test oil ten	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting to	uel delivery d Control
rev/min	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	rod fravel cm ³ /1000 strokes / mm, . · 7
(2) 880	78,0 - 80,0 (76,0 - 82,0)	,			100	ca.12
915 - 950 -	925: 1 mm RW ** 965: 5,1mmRW -	less *** dispersion	max. 6			

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

RQ 1100 .. (3)

PRG che	Control rod	i !	•	Test spec Control rod travel		Idle spee Setting p rev/min 7	Control red travel	Test spe	cifications 5 Control rod travel mm	Torque o	Control rod (3)
* Sle	eve positio	n 36,0	mm	1050 1100 1150 1240	14,0-16,0 10,1 4,5-7,3 0	-	-	-		-	-

Torque-control travel on flyweight assembly dimension a -

mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de governor co Test oil terr		Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting f	del delivery 6
rev/min	cm ³ /-1000 strokes 2	rev/min 3	rev/min	cm³/~1000 strokes	rev/min 6	cm ³ √1000 strokes / mm ² /7
(3) 1080	86,0 - 88,0 (84,0 - 90,0)				100	ca.12
	1110 : 1 mm Rb 1160: 4,2 mm Rb					
					1	

Checking values in brackets

K24

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 BOS 12,3 i

PE 6 P 120 A 721 RS 217

RQ 250/1100 PA 311 DR

supersedes 10.75

2. Edition

1 - 5 - 3 - 6 - 2 - 4 je 60°

Testing with T nozzles and fuel lines 8 x 2 x 1000!

company: MAN D3256 BTYE

223 kW (303PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,75-2,95)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,9	23,1 - 23,6	0,5(0,9)			
250	+0,1 5,9-6,1	, 1,7 - 2,3	0,8(1,2)			
800/500 -		C, 'col.4-5				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking PRG che	g of slider	Full-load s Setting po			cifications (4)	Idle spec	_		cifications (5)	Torque o	(3)
1	Control rod travel mm	rev/min	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel room 8	rev/min 9	Control rod travel mm 10	rev/min	Control rod travel
600	15,6-16,4	600	16,0	10,9	1145-1160	250	6,0	100	min.7,5	1100	11,9
				4,0	1190-1220			250	5,9-6,1	980	12,1
										905	12,7
1350	0-1							345-	385=2,0	800	13,0

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de governor co Test oil tem		Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting for Idle spee	Control
rev/min	cm³/ 1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
LDA 1100	1 bar 231,0-236,0 (228,0-239,0)		LDA 800 LDA 500	1 bar 218,0-224,0 (215,0-227,0) 0 bar 113,0-119,0 (110,0-122,0)	100	195,0-210,0

Checking values in brackets

Test at n =

rev/min decreasing pressure - in bar gauge pressure

BOS 12,3 i

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
217 with 311 DR	1,0 bar	0,45 0,28 0	13,0 - 13,1 12,3 - 12,4 10,3 - 10,6 9,6 - 9,7

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

PE 8 P 100 A 320 LS 810, Z

RQ 300/1250 PA 187R RQ 300/1250 PA189DR RQ 300/1250 PA329/2R LS 810

9,75 supersedes Daimler-Benz

OM 402 engine:

8 - 7 - 2 - 6 - 3 - 5 - 4 - 1 $\pm 0,50$ $0 - 45 - 90 - 135 - 180 - 225 - 270 - 315^{\circ} + 0,75$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Cy1.8

Rotational speed rev/min	Control rod trave!	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,7 - 12,4	0,4		MV.	
600	9	5,0 - 6,2				
600	15	15,3 - 17,0				
200	9	3,5 - 4,5				

Adjust the fuel delivery from each outlet according to the values in

PA187 R

B. Governor Settings

t		(1)		•	Test spec Control rad travel mm	rev/min	Idle spe Setting rev/min	Control rod travel	Test spe	cifications 5 Control rod travel mm	Torque o	Control rod (3) travel mm
600	15,	7-16,3	600	16,0	1270 1300 1330 1380			0	200 300 400 450	6,9-8,1 4,2-6,5 0 -2,4 0		

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

governor o	Full-load delivery on governor control lever fest oil temp. 40°C (104°F)		Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting fuel delivery Idle speed Contr		
rev/min	cm ³ /-1000 strokes		rev/min	rev/min 4	cm³/~1000 strokes 5	rev/min 6	rod travel Cm ³ /1000 strokes;/ mm 7	
1250 "Z"	102,0-104,0 100,0-106,0		600	600	80,0 - 85,0 78,0 - 87,0	100	11,0-13,0	
1250	88,0-90,0 86,0-92,0		600	600	66,5 - 71,5 64,5 - 73,5			
							./.	

Checking values in brackets

1.78

B. Governor Settings

PA	1	8	9	D	R
----	---	---	---	---	---

Checkin PRG che	g of slider	Full-load s	-	cifications (4)	Idle spec	_	ition Test spe	Torque control				
rev/min	Control rod travel	rev/min	Control	Control rod travel mm 5	rev/min	rev/min	Control rod travel	·	cifications (5) Control rod travel mm	rev/min	Control rod travel mm 12	(<u>3</u>)
600	15,7-16,3	600	16,0	1270 1300 1330 1380	15,6-16,0 7,2-13,5 0 - 9 0	550	0	200 300 400 450	6,9-8,1 4,2-6,5 0 -2,3 0			

Torque-control travel on flyweight assembly dimension a =

1290-1310 Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

gover	ad delivery on or control lever I temp 40°C (104°F)	Control rod stop	(3a) Fuel deliv	very characteristics 3b	Starting f	Control
rev/m	cm ³ /-1000 strokes	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min	cm ³ /1000 strokes / mm 7
12	94,0 - 96,0 92,0 - 98,0		600	74,5 - 79,5 72,5 - 81,5	100	14,0 - 16,0

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

PA329/2R

Checkin	g of slider	Full-load	speed re	guiation		idie spec	ed regula	ition	Torque control		
PRG che	ck (1)	Setting po	oint	Test spec	cifications (4)	Setting p	oint	Test spe	cifications (5)		(3)
rev/min	Control rod travel mm 2	rev/min	Control rod travel rmm	Control rod travel mm 5	rev/min	rev/min 7	Centrol rod travel mm 8	rev/min 9	control rod travel mm	rev/min	travel
600	15,7-16,3	600	16,0	1270 1300 1330 1380	15,6-16,0 7,5-13,0 0 - 9,2 0	550	0	200 300 400 450	6,9-8,1 4,2-6,5 0 -2,4 0	-	-

Torque-control travel on flyweight assembly dimension a

-

Speed regulation At1290-1310=

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

elivery on control lever np 40°C (104 F)	Control rod stop 3a	Fuel delivery characteristics			٠, -	d Control
cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5		rev/min 6	red travel cm ² /1000 strokes / mm 7
102,0-104,0	600	600	80,0-85,0		100	11,0 - 13,0
	1					
	control lever np 40°C (104 F) cm³/-1000 strokes	control lever (2) (3a) cm³/-1000 strokes rev/min 2	control lever (2) (3a) cm³/-1000 strokes rev/min rev/min 2 4	control lever (2) (3a) cm³/-1000 strokes rev/min rev/min cm³/-1000 strokes 2 3 4 5	Control lever	control lever (2) (3a) (3b) idle spee cm³/-1000 strokes rev/min 2 rev/min 4 5

Test Specifications Fuel Injection Pumps 2 and Governors

VDT-WPP 001/4

3. Edition

PES 6 P 120 A 420 RS 238

1 - 4 - 2 - 6 - 3 - 5 je 60°

RQ 300/1100 PA 193 DR RQV250-1100 PA 194 DR supersades

1.73,2.74

Testing with T nozzles and fuel lines 8 x 2 x 1000!

company:

Saurer D 2 KT

engine:

(330 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

1.8 + 0.1

mm (from BDC)

Cy1. 1

 $(^{+}_{-}0,15)$

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	24,9 - 25,6	1,0			
600	6 12	5,9 - 7,1 20,8 - 22,6				
200	15	30,6 - 33,0				
	6	3,7 - 4,7				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQ..PA 913 D

Checking of slider	Full-load speed re	_	idie speed regula		Torque control		
PRG check Control rod travel rev/min mm 1	Setting point Control rod travel rev/min mm 3 4	Test specifications Control red travel mm rev/min 5	Setting point Control rev/min mm 7	Test specifications Control rod travel mm 10	Control rod (3) travel rev/min mm 11 12		
650 15,7-16,3	650 16,0	1120 14,6-15,0 1160 8,0-13,0 1200 0 - 8,0 1270 0	5	100 7,1-8,1 250 5,3-7,4 350 3,2-5,4 510 0	750 15,8-16,0 1050 14,8-15,1		

Torque-control travel

on flyweight assembly dimension a =

 $0.35 \, \mathrm{mm}$

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control fever np. 40°C (104°F)	Control rod stop 3a		Fuel delive	ery characteristics 3b	Starting for	uel delivery d Control
rev/min 1	cm ³ /-1000 strokes	rev/min 3		rev/min 4	cm³/-1000 strokes 5	rev/min	cm ³ /1000 strokes/ mm
LDA	0,7 bar			LDA	0,7 bar	100	21 - 23
1100	206,0-208,0			700	178,0-182,0		ge-over point 130 U/min
	0 bar = $2,0+0$,1 mm RW le	SS				
							./.

Checking values in brackets

Upper rated s	peed			Intermediate	rated spe	ed		Lower rated	speed		Sliding el	eeve travel
deflection	Control rodtravel	travel mm		Degree of deflection of control lever	rev/min	Control i travel mm		Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	mm
1	2	3		4	5	6		7	88	9	10	11
ca.68	1100 1150 1200 1280 1360	15,0-18, 11,0-15, 6,6-11, 0 - 6,	,0	-	-		-	ca.12	180 250 350 490	6,4-8,0 3,7-6,1 1,9-3,3 0	1100	-
								За				

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-foad de Control-rod Test oil tem	stop	Rotational-speed (2b) Irmitation intermediate speed	Fuel delin high idle s	very characteristics (5a) speed (5b)	Starting Idle switching	$\overline{}$	Torque- travel	Control cod
rev/min	cm ² 1000 strokes	rev/min 4a	rev/min	cm ³ /1000 strokes	rev/min	cm3/1000 strokes	rev/min	travel mm
LDA	0,7 bar	LDA 0,7 bar	LDA	0,7 bar	100	.21 - 23		
1100	206,0-208,0	1130,	700	178,0-182,0		nge-over poi 0-130 U/min	nt	
	0 bar = 2,0	+ 0,1 mm RW	less			•		

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed			Stiding st	eeve travel
deflection		Control rod	(1a)	Degree of deflection of control		Control rod travel	Degree of deflection of control	l	Control ro travel			1
		rev/min	(2a)	lever	rev/min	mm (4	lever	rev/min	mm	3	rev/min	mm
1	2	3		4	5	6	7	8	9		10	11
							3 a)					

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rou Test oil ten		intermediate speed	Fuel deln high idle s	rery characteristics 5a speed 5b	Starting Idle switching		Torque- travel	Control rod
rev/min	cm³/1000 strakes	rev/min (4a)	rev/min	cm ³ /1000 strokes	rev/min	cm ⁴ /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

PES 8 P 100 A 921/5 RS 252 RQV 300-1300 PA 205 KR,

.. 920/5 RS 252/34 223 K, 225 K

Test equipment as per VDT-WPP 110/2 3. Edition Cam sequence and angular cam spacing.

1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je 45°

supersedes

IHC - USA company:

DVT 800.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

+ 0,15

Port closing at prestroke

2,8 + 0,1

mm (from BDC)

-0.05'

Rotational speed rev/min 1	Control rod travel mm	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,3 - 12,0		6		
600	15	16,1 - 17,8	ļ		•	
200	6	2,9 - 3,9				

Adjust the fuel delivery from each outlet according to the values in g

B. Governor Settings

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Stiding s	leeve travel
deflection	rev/min Control	Control rod ta			Control rod travel	Degree of deflection		Control rod travel		1
1.	rod trave mm	rev/min (28	of control lever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	1310 1400 1500 1640	14,8-17,4 9,2-13,4 1,7- 8,2 0	-		-	ca.10	100 300 500 630	6,6-8,0 3,4-5,6 1,4-2,7	250 500 800 1310 1520-	0,6-2,6 2,6-3,2 4,6-5,0 8,2 1640 end(11)
						(3a)				

Torque control travel a =

mm **

Section C, col. 8!

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load di Control-roo Test oil ten		Imitation Intermediate speed	Fuel deliv	rery characteristics 5a	Starting Idle switchir		Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min (4a)	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
** Se	e page 2!			·				

Checking values in brackets

* 1 mm less control rod travel than col 2

6.75

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Starting fuel delivery

C. Settings for Fuel Injection Pump with Fitted Governor

Rotational-speed limitation

Control-rod

		stop	RQ	1 .				
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min		
1	2	3		4	5	6	7	<u> </u>
	52 ** 205 KR:						•	
LDA 1300	0,85 bar 86,5-88,5	1340-1350*	900 9	,85 5,5-99, 7,5-71,	E	-230	1300 ca.	-
			LDA 0	bar 0,5-46,	***	- 11 J/min	900 ca. 400 ca.	•
Ppe 2	52 ** 223 KR:							
LDA 1300	0,85 75,0-77,0	1340-1350*	900 9	,85 1,0-95, 6,0-80,	n	-230	1300 ca.	•
			LDA 0	bar 5,0-41,	- 300 8 [,]	- 11 U/min	900 ca. 700 ca.	10,0 9,4
Ppe 2	52 ** 224 KR:							
LDA 1300	0,85 71,0-73,0	1340-1350*	80C 1	.85 bar 03,0-10 1,5-85,	F	-230 - 11	1300 ca.	9,0
				bar 8,5-44,	***		900 ca. 600 ca.	
Ppe 2	52 ** 225 KR:							
LDA 1300	0,85 93,5 - 95,5	1340-1350*	900 9	,85 bar 6,5-100 1,5-85	E	-230 - 11	1300 ca.	
				bar 5,0-41,	***		900 ca. 700 ca.	-

Fuel delivery characteristics

Full-load delivery

Test oil temp 40°C (104°F)

En

^{**} With

^{***} Change-over point

40

WPP 001/4 DAF 11,6 f 4. Edition

n

PE 6 P 110 A 320 RS 281, Z

RS 281 RS 281, Z RQ 250/1100 PA 196 R EP/RSV 250-2200 P5/11R EP/RSV 250-1100 P5/390 R supersedes 4.75 company: DAF

DKT 1160 (290 PS)
-Z- DKTD1160 (260 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 $(^{+}_{-}0,^{15}_{,05})$

Port closing at prestroke

Testoil-ISO 41

2,8 + 0,1

mm (from BDC)

	travel *	· · · · ·	cm ² /	Contro! rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	13,2 - 13,9	0,6			
600 600 200	9 15 9	6,4 - 7,6 19,0 - 20,9 4,8 - 6,0				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQ 250/1100 PA 196 R

Checkin PRG che rev/min 1	Control rod	Full-load Setting por rev/min 3	•	-	rev/min	Idle spec Setting p rev/min 7	Control rod travel	cifications 5 Control rod travel mm	Torque o rev/min 11	Control rod
660	15,7-16,	660	16,0	1120 1160 1220 1280	15,6-16,0 9,0-14,0 0 - 7,0 0 - 1		0	6,5-8,1 4,8-6,8 1,2-3,7 0	-	-

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever np. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics	Starting f	
rev/min	cm ³ /-1000 strokes	rev/min 3	rev/min	cm ³ /-1000 strokes	rev/min	Control rod travel cm ³ /1000 strokes:/ mm
281- 850	LDA 0,7 bar 140,5-143,5 (138,5-145,5)		LDA 600	0 bar 126,5-129,5 (124,5-131,5)		
281Z-	LDA 0,7 bar 135,5-138,5 (133,5-140,5)		600	126,5-129,5 (124,5-131,5)		
						./.

Checking values in brackets

2.77

①

B. Governor Settings

Upper rated s	peed rev/roin	Control rod	0	Intermediate	rated spe	ed Control rod	- 1	Lower rated	speed	Control red	Sliding s	eeve travel
	Control rod travel mm	travel	(a) (2a)	deflection of control lever	rev/min	travel		deflection of control lever	rev/min	travel	rev/min	mm (1)
1	2	3		4	5	6		7	8	9	10	11
ca.50	1250	11,4)	withour spring with a spring				ca.20	250	19-21 6,5-7,1 3,6-5,2	800 430	0

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

1	Istop ip 40°C (104°F) (2)	Rotational-speed (2b) limitation intermediate speed (4a)	characte high idle :	ristics	Starting Idle switchir	fuel delivery 6	Torque- travel	Control 5 Control rod
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
Pe ca. 10	281 ** mm RW	P5/11R:						
Pe Full	281, Z ** load see page						250	→ 390 6,0
		1145-1155*						V

Checking values in brackets

* 1 mm less control rod travel than col. 2

** with governors

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

1		diminution Control rod travel-
Gauge pressure = bar	 	mm
0,39 - 0,42	0,12 - 0,18	-0,1 -1,0
२ 0,34 - 0,36	0,12 - 0,18	-0,1 -1,0
		, 1 ;
	0,39 - 0,42	0,39 - 0,42

 $850 \text{ min}^{-1} + \text{pü} = 0.7 \text{ bar}$

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 16.0 h 1. Edition

PE 10 P 100 A 320 LS811

RQV 300-1250 PA 390/2R (1) RO 900 PA 310R

supersedes company

engine

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2

0 -45 -72 -117-144-189-216-261-288-333° (0.75)

A. Fuel Injection Bungs Settings

Cyl. 10

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Rotational speed rev/min	Control rod travel mm	Fuel delivery (1) cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,1	9,8 - 10,0	0,3(0,6)	11,4	9,6 - 9,8	n = 850 min ⁻¹
300 600	+0,1 6,9-7,1	0,9 - 1,3 C, col.4-5	0,3(0,5) 0,4(0,7)		1,7 - 2,3	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQV..390/2R (1)

ng sleeve travel	Sliding		speed	Lower rated	eed		1	peed	Upper rated s		
1		Control rod travel		Degree of deflection	Control rod travel		Degree of deflection of control	d (a)	Control rod	rev/min Control	deflection
min mm	rev/min	mm 3	rev/min	of control lever	mm 4	rev/min	lever	28	rev/min	rod travei mm	lever
11	10	9	8	7	6	5	4		3	2	1
00 2,1-3,0 00 4,4-5,0		min.9,8 6,9-7,1	100 300	ca.13	-	-	-	17,8 1	15,2-1 0 -	1250 1450	ca.68
		:	620-6								
		υ - ι	700	3					1290-1: 1335-1:		ca.64
0(800	6,9-7,1	300	ca.13	-	-	-	1300	0 - 1290-1	1450 9,1	

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roe Test oil ten	blivery d stop np. 40°C (104°F) 2	Rotational-speed 2b limitation intermediate speed	mitation high idle speed 550			fuel delivery 6	Torque- travel	control 5
rev/min	crh³/1000 strokes .	rev/min 4a	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1250	98,0-100,0 (96,0-102,0)	1290-1300*	600	76,0-81,0 (74,0-83,0)	100 300	110,0-130,0 10,0- 14,0		
								./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

Upper rated s	peed			Intermediate	rated spe	ed		Lower rated	speed			Stidina st	eeve travel
deflection		Control rod travel	(ta)	Degree of deflection		Control ro travel	od	Degree of deflection		Control r travel			0
	rod travel mm	mm rev/min	(2a)	of control lever	rev/min	шш	4	of control lever	rev/min .	mm	(3)	rev/mır	mm
1	2	3		4	5	6		7	8	9		10	11
ca.32	10,4	915-920		-	-	-	_	-	-	-		900	5,6
	4,8	940-950)										
	1000	0 - 1											
								(3a)					

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil terr		Rotational-speed (2b) limitation intermediate speed (4a)	character high idle s	ristics	Starting Idle switchin	fuel delivery 6	Torque- travel	Control (5) Control rod travel
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
850	96,0 - 98,0 (94,0 -100,0			di	100 300 945 spers	16 - 17mmRW 18 - 24 4,7-4,9mmRW ion max.4(6)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	diminution Control rod travel- difference mm

En'

Test Specifications Fuel Injection Pumps 2 and Governors

MPP 001/4 DAF 11,6 a

4. Edition

PE 6 P 110 A 320 RS280

RQ 250/1100 PA24R EP/RSV 200-1100 P1/10R ./. EP/RSV 250-1100 P1/391R ./. supersedes

6.76

company:

van Doorne

engine:

DKA 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,8 + 0,1

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	15,1 - 15,9	0,6			
600	9 15	8,4 - 9,6 21,0 - 22,9				
200	9	6,8 - 8,0				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQ ... 24 R

Checkin PRG che	Control rod Control Co		_	cifications (4)	Idle speed regulation Setting point Test specifications Control rod Control				Torque control		
rev/min 1	travel mm 2	1	rod travel mm 4	rod travel mm 5	rev/min 6		rod travel mm 8	rev/min 9	travel mm 10	rev/min 11	travel mm 12
500	15,7-16,3	500	16,0	1120 1150 1180 1240	15,6-16,0 9,2-14,0 0 - 9,8 0 - 1	540	0	100 200 300 440	6,7-8,1 5,0-7,1 2,4-4,6 0	1	-

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	fuel delivery characteristics			Starting for	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5		rev/min 6	Control rod travel cm ³ /1000 strokes:/ mm
850	117,5 - 120,5 115,5 - 122,5						

Checking values in brackets

8.76

B. Governor Settings

	r rated speed Control rod travel mm 2		Intermediate rated speed 4 5 6			Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm 9	I	rque control Control rod travel mm 11
ca.68	1100 1180 1220	16,0 10,2 6,0	with spri	out au ng	ıxilia	ca.29 ry	200 100 200	6,0 19 - 21 5,7-6,3	350	0
29	1200 1240 1310	5,6 - 9,6 2,0 - 5,6 0,3 - 1	with spri	auxil ng	iary		300 400	1,8-3,8 0 - 1	200	0,3-0,5

C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp. 40°C (104°F)	speed limitat.		el delivery aracteristics				Control rod
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	travel mm 9
850	117,5 - 120,5	1140-1150*						

Checking values in brackets

Testoil-ISO 4113

* 1 mm less control rod travel than col. 2

B. Governor Settings

EP/RSV... 391R

Degree of deffection of control lever	r rated speed Control rod travel mm		Intermed	Intermediate rated speed 4 5 6				rated speed Control rod travel mm 9	3 To	rque control Control rod travel mm
ca.68	1100 1180 1220	16,0 10,2 6,0	without auxilia spring with auxiliary spring			ca.30 ry	250 100	6,0 19 - 21	350	0
29	1200 1240 1310	5,6-9,6 2,0-5,6 0,3-1,0					250 350 460	5,7-6,3 1,7-3,7 0 - 1	200	0,3-0,5

C. Settings for Fuel Injection Pump with Fitted Governor

	amp. 40°C (104°F)	Rotational- speed limitat Note: changed to) rev/min	el delivery earacteristics cm ³ /1000 strokes	Starting f	uel delivery 5 cm ³ /1000 strokes	•	e stop Control rod travel mm
850	117,5-120,5 115,5-122,5	1140-1150*	5	6		8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel injection Pumps 2 and Governors

WPP 001/4 DAF 11,6 g

5. Edition

PE 6 P 120 A 320 RS 285

RQ 250/1100PA 196 R EP/RSV 250-1100 P 5/11 R

2.77 supersedes company:

EP/RSV 250-1100 P 5/390 R

DAF DKS 1160

Testing with T nozzles and fuel lines 8 x 2 x 1000!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 $\binom{+0,15}{-0,05}$

Port closing at prestroke

2.8 + 0.1

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm ³ /100 strakes 3	Difference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mrn 6
1000	12	22,5 - 23,2	0,9			
600	9	10,6 - 12,0				
	15	27,3 - 29,8				
200	9	7,4 - 8,6				

Adjust the fuel delivery from each cutlet according to the values in

B. Governor Settings

196DR

Checkir PRG che	ng of slider eck	Full-load s	•	_	cifications (4)	Idle spee Setting p	-		cifications (5)	Torque o	control 3
rev/min	Control rod travel mm 2	rev/min	control rod travel rnm 4	Control rod travel mm	rev/min	rev/min 7	Control red travel mm	rev/min 9	Control rod travel mm	rev/min	travel
600	15,7-16,3	660	16,0	1120 1160 1220 1280	15,6-16,0 9,0-14,0 0 - 7,0 0 - 1		0	150 300 450 570	6,5-8,1 4,8-6,8 1,2-3,7 0	-	-

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		ontrol lever (2) (3a)		ery characteristics	Starting fuel delivery Idle speed Control		
rev/min 1	cm ³ /-1000 strokes	rev/min 3	rev/min 4	cm ³ /-1000 strokes	rev/min	cm ³ /1000 strokes:// mm	
LDA 850	0,7 bar 191,5-195,5 (189,5-198,5)		LDA 600	0 bar 133,5 - 137,5 (130,5 - 140,5)	100	ca.32	
						./.	

Checking values in brackets

B. Governor Settings

Degree of deflection of control iever	r rated speed Control rod travel mm	rev/min Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6			Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	3 To	rque contro! Control rod travel mm
ca.50	1100 1160 1230	16,0 11,4 4,8	without auxilia spring			ca.20 ry	150	6,8 19 - 21	800 430	0 1,2-1,8
29	1200 1250 1340	5,8-9,0 1,4-5,0 0,3-1,0	with spri	auxil ng	iary		250 320 460	6,5-7,1 3,6-5,2 0 - 1	,30	,,_ ,,

C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat.		el delivery paracteristics	Starting fuel delivery 5		idle stop	
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) ray/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	_	Control rod travel mm
Pum	285 with 5/1 F 10mm CRT or ful	: 1-load deli	very s	tated on govern	or pla	te!	В	9
Pump	285 with 5/390 as RQ governor		ver-					

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in ber gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	diminution Control rod travel- difference mm (1)
285 with 196 DR) 285 with 390 R	0,39 - 0,41	0,10 - 0,17	- 0,1 - 1,5
Notes			

Notes

(1) when n =

rev/min and gauge pressure = bar (= maximum fuli-load control rod travel)

En